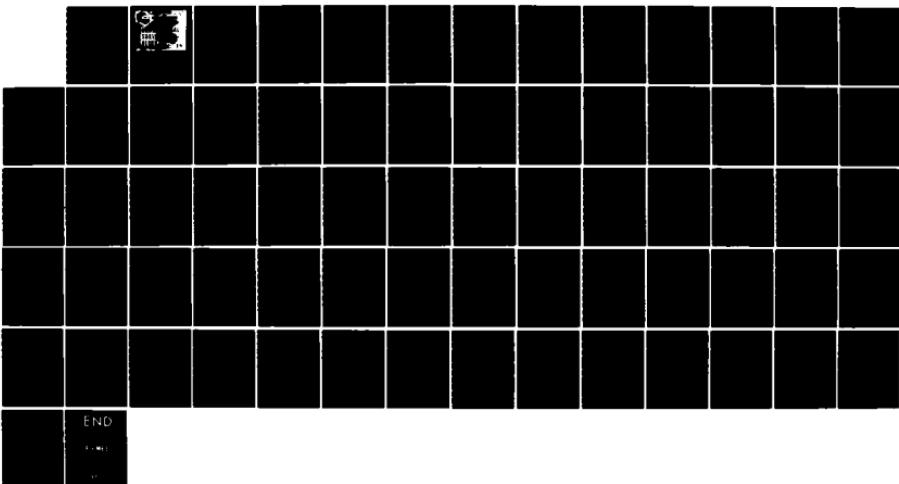
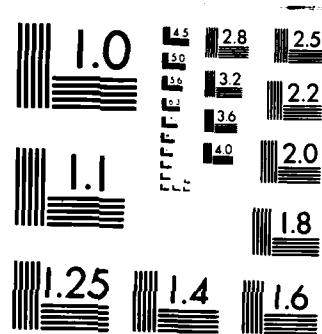


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UNITED STATES AIR FORCE

OCCUPATIONAL SURVEY REPORT

ELECTRICIAN CAREER LADDER

(AFSC 542X0 AND OCCUPATIONAL SERIES
2805, 2810, 2854, 3359, AND 4855)

AFPT 90-542-509

FEBRUARY 1985

OCCUPATIONAL ANALYSIS PROGRAM
USAF OCCUPATIONAL MEASUREMENT CENTER
AIR TRAINING COMMAND
RANDOLPH AFB, TEXAS 78150

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INSTRUCTION BOOK
FOR CLEANING AND SUPPLYING INSTRUMENTS

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PREFACE

This report presents the results of an occupational survey of the Electrician career ladder (AFSC 542X0 and civilian series 2508, 2810, 2854, 3359, 4855). The survey was requested by both the 3700 Technical Training Wing Training Manager and the Headquarters Air Force Engineering and Services Center to develop a more complete picture of electrician jobs and who is doing them. Authority for conducting occupational surveys is contained in AFR 35-2. Computer products upon which this report is based are available for use by operations and training officials.

The survey instrument for this project was developed by Chief Master Sergeant Donald J. Cochran, Inventory Development Specialist. Sergeant Harold R. Tackett, Computer Programmer, provided computer support for this project. Dr. Linda S. Aslett analyzed the survey data and wrote this report, which was reviewed and approved by Major Charles D. Gorman, Chief, Airman Career Ladders Analysis, USAF Occupational Measurement Center.

Copies of this report are distributed to Air Staff Sections, major commands, and other interested training and management personnel. Additional copies are available upon request to the USAF Occupational Measurement Center, Attention: Chief, Occupational Analysis Branch (OMY), Randolph AFB, Texas 78150-5000 (AUTOVON 487-5811).

PAUL T. RINGENBACH, Colonel, USAF
Commander
USAF Occupational Measurement
Center

WALTER E. DRISKILL, Ph. D.
Chief, Occupational Analysis Branch
USAF Occupational Measurement
Center

SUMMARY OF RESULTS

1. Survey Coverage: Inventory booklets were completed by 1,393 military and civilian Electricians. This sample was representative in terms of MAJCOM and grade distribution, providing a comprehensive view of jobs performed by Air Force Electricians.
2. Specialty Jobs: Survey information indicates military and civilian Electricians performed basically similar technical jobs. Differences surfaced in two areas: civilians tended to do more repair and maintenance of electro-mechanical systems, and military personnel spent more time performing on-the-job training duties. Two core jobs claimed the majority of both military and civilian Electricians: General Electrician, a job covering the full spectrum of inventory duties, and Interior Power and Light Distribution Systems Electricians, a job focusing on installation and maintenance of interior lighting systems.
3. DAFSC and Skill-Level Differences: Technical work is primarily done by 3- and 5-skill level personnel. At the 7-skill level, a third of job time involves technical duties, with supervision and management responsibilities occupying the remainder of the 7-skill level electrician's time.
4. Job Satisfaction: Job satisfaction for Electricians was good for all experience groups. Job interest and perceived use of personal talents and training were consistently higher for 542X0 personnel than for comparable AFSSs surveyed in 1984.
5. Career Ladder Documents: Both the AFR 39-1 Specialty Descriptions and the Specialty Training Standard (STS) are well supported by survey data and adequately cover the duties of Air Force Electricians. A review of the entry-level course Plan of Instruction (POI) resulted in a recommendation for more training on explosion-proof systems and emergency lighting systems. Otherwise, the basic course at Sheppard AFB is well structured to support jobs done by first-enlistment personnel.
6. Strength and Stamina Comments: Several write-in comments focused on the physical difficulty Electricians experience lifting heavy equipment overhead for installation or maintenance of items high on a wall or ceiling.
7. Implications: Survey data reveal military and civilian Electricians performing basic jobs in common, with civilians doing more electro-mechanical equipment repair and maintenance. On-the-job training (OJT) is an issue examined in this survey due to the large number of Electricians (approximately 50 percent) who receive no entry training but, instead, receive directed duty assignments (DDA). Survey data indicate both military and civilians conduct OJT, but the bulk of this activity is carried out by 7-skill level military personnel. No major changes are recommended for any specialty training support documents or AFR 39-1. All documents provide accurate reflections of the work of an Air Force Electrician. Based upon write-in comments relating to strength and stamina concerns, recommend a review of present X-factor requirements for this specialty.

OCCUPATIONAL SURVEY REPORT
ELECTRICIAN CAREER LADDER
(AFSC 542X0 AND OCCUPATIONAL SERIES
2805, 2810, 2854, 3359, AND 4855)

INTRODUCTION

This is a report of an occupational survey of both military and civilian personnel in the Electrician career field completed by the Occupational Analysis Branch, USAF Occupational Measurement Center. The last occupational survey of this career ladder surveyed only military personnel and was published in October 1977. The present survey was requested by both the 3700 Technical Training Wing Training Manager and the Headquarters Air Force Engineering and Services Center with two primary objectives: (1) identify actual tasks done in performance of electrician work, and (2) survey civilians to achieve a more complete picture of electrician jobs and who is doing them.

Background

The Electrician career field has been a relatively stable one since its inception in 1951 as AFS 561X0. The AFS became the 542X0 in 1961 and for a period of years in the early 1960s, numerous shreds existed to designate Electricians supporting specific missile systems. Most of these shreds were deleted in 1964. The F-shred supporting the Titan II remained with the Electrician specialty until 1981 when personnel holding that shred were converted to the new AFS 445X0, Missile Facilities Specialist/Technician.

Personnel entering the 542X0 career ladder may or may not attend AFS entry-level training conducted at Sheppard AFB, Texas. Approximately 50 percent do attend Course 3ABR54230-001 Electrician, which lasts 6 weeks, 4 days. The instructional design is Group/Lock Step to include electrical fundamentals, using tools and test equipment, installation of service entrances, installation and maintenance of interior wiring systems in non-metallic sheathed cable and conduit, motors and motor installations, electrical systems in hazardous locations, transformers, voltage regulators, battery banks and chargers, emergency lighting systems and dining hall and domestic appliances. Airmen not attending technical training receive a directed duty assignment (DDA) and complete initial training via on-the-job training (OJT).

The duties of the 3- and 5-skill level Electrician are described in AFR 39-1 as installing, servicing, modifying, and repairing electrical equipment and systems, as well as troubleshooting and repairing electrical and industrial circuits and equipment. Duties performed at the 7-skill level include advising on technical problems of installation, modification and repair of electrical real property installed equipment and systems, inspecting electrical completed or

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in-progress work, and performing planning activities. Installation, servicing, modification, and repair of equipment remains in the 7-skill level description, but the tasks performed include the more difficult ones and the requirement for direct supervision when working on high voltage systems is dropped. Supervision is a responsibility at all skill levels, but for the 3- and 5-skill levels it is limited to reviewing completed repairs, instructing subordinates on techniques, and providing immediate supervisor job status information. At the 7-skill level, supervision includes responsibility for on-the-job training, planning and scheduling work assignments, ensuring availability of equipment and spare parts, and evaluation of subordinates' performance.

SURVEY METHODOLOGY

Inventory Development

The data collection instrument for this occupational survey was USAF Job Inventory AFPT 90-542-509, dated October 1983. A preliminary task list was prepared after reviewing pertinent career ladder publications and directives, tasks from previous job inventories, and data from the last occupational survey report (OSR). This preliminary task list was refined and validated through field interviews at operational bases determined primarily on recommendations of major command functional managers. Bases in order of visit were:

Barksdale AFB LA (SAC)
MacDill AFB FL (TAC)
Davis-Monthan AFB AZ (TAC)
Nellis AFB NV (TAC)
Vandenberg AFB CA (SAC)
Travis AFB CA (MAC)
Malmstrom AFB MT (SAC)
Kirtland AFB NM (MAC)
Holloman AFB NM (TAC)
Gentile AFS OH (Air Force Orientation Group)
Griffiss AFB NY (SAC)
Andrews AFB MD (MAC)
Charleston AFB SC (MAC)
San Antonio Real Property Maintenance Agency
(Brooks, Kelly, Wilford Hall)

These bases were chosen due to their geographical location, major command of assignment, and unique functions:

Barksdale - largest SAC southern base with more electrician requirements.

Griffiss - northern tier centrally located SAC base with common electrical problems in cold climate areas.

Malmstrom - SAC base with largest missile requirements for electricians requiring different work situations.

Vandenberg - largest SAC base with electrical requirements with western location.

Nellis - TAC base with Red Horse unit, Rapid Deployment Force unit, Red Flag Operation, storage for warheads, all requiring members with Secret security clearance--sometimes creates problems in getting qualified members.

Davis-Monthan - TAC base with missiles, aircraft graveyard, high dust area, dry desert area.

MacDill - TAC base with home for US Central Command and Readiness Command (formerly Rapid Deployment Force), high humidity area, large rainfall amounts, mildew and rot in electrical areas.

Holloman - TAC base - the only base in Air Force with type of equipment these members work on. Only military members are assigned to the 4449 Mobility Squadron (mobile unit). They deploy whole base. Bare Base unit - perform somewhat like advanced Prime BEEF teams.

Andrews, Charleston, Kirtland, Travis -

MAC bases with largest population of Electricians where best coverage for inventory would be provided. Also, location of bases provides variety of weather conditions.

Gentile AFS - This is the home of the Air Force Orientation Group (AFOG). AFOG's mission is creating and displaying exhibits that inform the American public about Air Force people, equipment, and contributions to the nation. These efforts play a major role in Air Force public affairs and recruiting efforts. AFOG produces both outdoor and indoor exhibits. Interior electricians assigned to AFOG perform electrical maintenance on these exhibits. These exhibits include expandable theater vans, theater/aircraft cockpit vans, mobile missile (M-X) exhibits, aircraft exhibits, portable theaters, permanently installed exhibit at the Chicago Museum of Science and Industry, several art shows, and numerous other exhibits depicting Air Force equipment, personnel, projects, and technology.

This process resulted in a final job inventory containing 550 tasks grouped under 10 duty headings and a background section asking for such information as job title, equipment and tools used, contingency tasks performed, and amount of time spent working at various heights.

Survey Administration

During the period of September through December 1983, Consolidated Base Personnel Offices (CBPO) in operational units worldwide administered the inventory to job incumbents holding AFSC 542X0. These personnel were selected from a computer-generated mailing list obtained from personnel data tapes maintained by the Air Force Human Resources Laboratory (AFHRL). Lists of civilian personnel in the electrician series 2805, 2810, 2854, 3359, and 4855 were supplied by the Air Force Office of Civilian Personnel Operations (OCPO), and inventory recipients were personnel working in civil engineering squadrons (selected by Engineering and Services Center at Tyndall AFB as representative work centers) in the continental United States. Civilian respondents participated in the survey on a strictly voluntary basis.

Each individual who completed the inventory first completed an identification and biographical information section and then checked each task performed in their current job. After checking all tasks performed, each member rated each selected task on a 9-point scale showing relative time spent on that task as compared to all other tasks checked. The ratings ranged from one (very small amount of time spent) through five (about average time spent) to nine (very large amount of time spent).

To determine relative time spent for each task checked by a respondent, all of an incumbent's ratings are assumed to account for 100 percent of his or her time spent on the job and are summed. Each task rating is divided by the sum of the total task ratings and multiplied by 100. This procedure provides a basis for comparing tasks in terms of both percent members performing and average relative percent time spent.

Survey Sample

Personnel, both military and civilian, were selected to participate in this survey to ensure an accurate representation across using major commands (MAJCOM). Table 1 displays the percentage distribution of assigned AFSC 542X0 personnel as of March 1983. Also shown is the MAJCOM percent distribution of survey respondents. Military MAJCOM groups basically parallel the assigned distribution. The civilian distribution shows the proportionally heavier MAJCOM users of civilian Electricians--AFLC and AFSC. The total survey sample for this study is both representative and comprehensive.

TABLE 1
COMMAND REPRESENTATION OF SURVEY SAMPLE

<u>COMMAND</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF MILITARY IN SAMPLE</u>	<u>PERCENT OF CIVILIANS IN SAMPLE</u>
SAC	24	23	26
TAC	16	14	14
USAFE	13	14	-
MAC	12	12	10
AFLC	10	12	21
PACAF	9	8	-
ATC	6	1	7
AFSC	4	8	11
AAC	3	1	1
OTHER	3	7	10

MILITARY:

Total Assigned* - 1,574
 Total Eligible for Survey** - 1,274
 Total in Sample - 952
 Percent of Assigned in Sample - 60%
 Percent of Eligible in Sample - 75%

CIVILIAN:

Total Sampled - 766
 Total in Final Sample - 444
 Percent in Final Sample - 58%

* Assigned strength as of March 1983

** Excludes those in PCS status, students, hospitalized personnel, and personnel with less than 6 weeks on the job

Table 2 displays survey respondents in paygrade groups distribution and Table 3 lists the same distribution by Total Federal Service Time groups. The majority of the military respondents (62 percent) are E-4 and below. While the military group is junior in both grade and time in service (see Table 3), civilian counterpart Electricians are senior--with grade 10 comprising 83 percent of the survey respondents.

TABLE 2
PAYGRADE AND WAGE GRADE REPRESENTATION
OF SURVEY SAMPLE

GRADE	542X0		CIVILIANS	
	PERCENT OF ASSIGNED*	PERCENT OF SAMPLE	GRADE	PERCENT SURVEYED
AIRMEN	38	42	5	**
E-4	22	19	7	1
E-5	23	22	8	9
E-6	12	13	9	5
E-7	4	4	10	83
E-8, E-9	**	0	11	**

* Manning figures as of March 1983
** Less than 1 percent

TABLE 3
TIME IN FEDERAL SERVICE DISTRIBUTION OF SURVEY SAMPLE

	MONTHS FEDERAL SERVICE					
	1-48	49-96	97-144	145-192	193-240	241+
NUMBER OF AFS 542X0 ASSIGNED	838	282	177	151	83	33
NUMBER OF AFSC 542X0 IN SAMPLE	466	187	114	97	56	14
PERCENT OF AFS 542X0 IN SAMPLE	50%	21%	12%	10%	6%	1%
NUMBER IN CIVILIAN SAMPLE	52	39	88	69	57	155
PERCENT IN CIVILIAN SAMPLE	11%	9%	19%	25%	12%	34%

* Manning figures as of March 1983

Task Factor Administration

In addition to completing the job inventory, selected senior 542X0 personnel (generally E-6 and E-7 technicians) were also asked to complete a second booklet for either training emphasis (TE) or task difficulty (TD). Major command distribution of these raters appears in Table 4. The TE and TD booklets are processed separately from the job inventories. The rating information is used in several analyses discussed in detail within this report.

Task Difficulty (TD). Each senior technician completing a TD booklet was asked to rate all inventory tasks on a 9-point scale (from extremely low to extremely high) as to relative difficulty. Difficulty is defined as the length of time required by an average member to learn to do the task. Task difficulty data were independently collected from 34 experienced 7- or 9-skill level 542X0 personnel stationed worldwide, with all raters assessing the difficulty of inventory tasks. The interrater reliability (as assessed through components of variance of standard group means) was good--.90. Task difficulty ratings were adjusted so tasks of average difficulty would have a 5.00 rating. The resulting data essentially provides a rank ordering of tasks indicating the relative degree of difficulty for each task in the inventory.

Job Difficulty Index (JDI). After computing the 542X0 task difficulty index for each task item, it was then possible to compute a Job Difficulty Index (JDI) for the job groups identified in the survey analysis. The index provides a relative measure of which jobs, when compared to other jobs identified, are more or less difficult. An equation using the number of tasks performed and the average difficulty per unit time spent (ADPUTS) as variables are the basis for the JDI. The index ranges from 1.0 for very easy jobs to 25.0 for very difficult jobs. The indices are adjusted so the average JDI is 13.00.

Training Emphasis. Experienced technicians completing TE booklets were asked to rate tasks on a 10-point scale ranging from no training (0) to extremely heavy training required (9). Training emphasis is a rating of which tasks require more emphasis in structured training for first-term personnel. Structured training is defined as training provided at resident technical schools, field training detachments (FTD), mobile training teams (MTT), formal OJT, or any other organized training method. Training emphasis data were independently collected from 37 experienced 54270 and 54290 personnel stationed worldwide. The interrater reliability (as assessed through components of variance of standard group means) for these raters was .94, indicating there was good agreement among raters as to which tasks required some form of structured training and which did not.

When used in conjunction with other information, such as percent members performing, TD and TE ratings can provide insight into training requirements. Such insights may help validate lengthening or shortening portions of instruction supporting AFSC-needed knowledges or skills.

TABLE 4
TASK FACTOR RATER MAJCOM DISTRIBUTION

<u>COMMAND</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF TD RATERS</u>	<u>PERCENT OF TE RATERS</u>
SAC	24	29	27
TAC	16	18	16
USAFE	13	9	11
MAC	12	9	14
AFLC	10	6	5
PACAF	9	6	5
ATC	6	8	5
AFSC	4	3	8
AAC	3	3	5
OTHER	3	9	4

SPECIALTY JOBS

A key aspect of an occupational survey is to examine the job structure of the career ladder on the basis of what people are actually doing in the field, rather than how official career ladder documents say they are employed. The analysis of actual job structure is made possible by the use of the Comprehensive Occupational Data Analysis Programs (CODAP). By using CODAP, job functions are identified on the basis of similarity in tasks performed and relative time spent performing the tasks.

The specialty structure analysis process consists of determining the job structure of a specialty in terms of the job types, subclusters, clusters and independent job types it contains. A job type is a group of individuals who perform many of the same tasks and spend similar amounts of time performing them. When a group of individuals perform related tasks in common, but still vary considerably from one another in the overall work done, they are called a subcluster. A group of highly related jobs is called a cluster. In some cases, specialized jobs are identified which are so dissimilar they cannot be satisfactorily grouped with other jobs. These jobs are labeled independent job types. All of these terms will be seen in the description of Electrician jobs.

Specialty Structure Overview

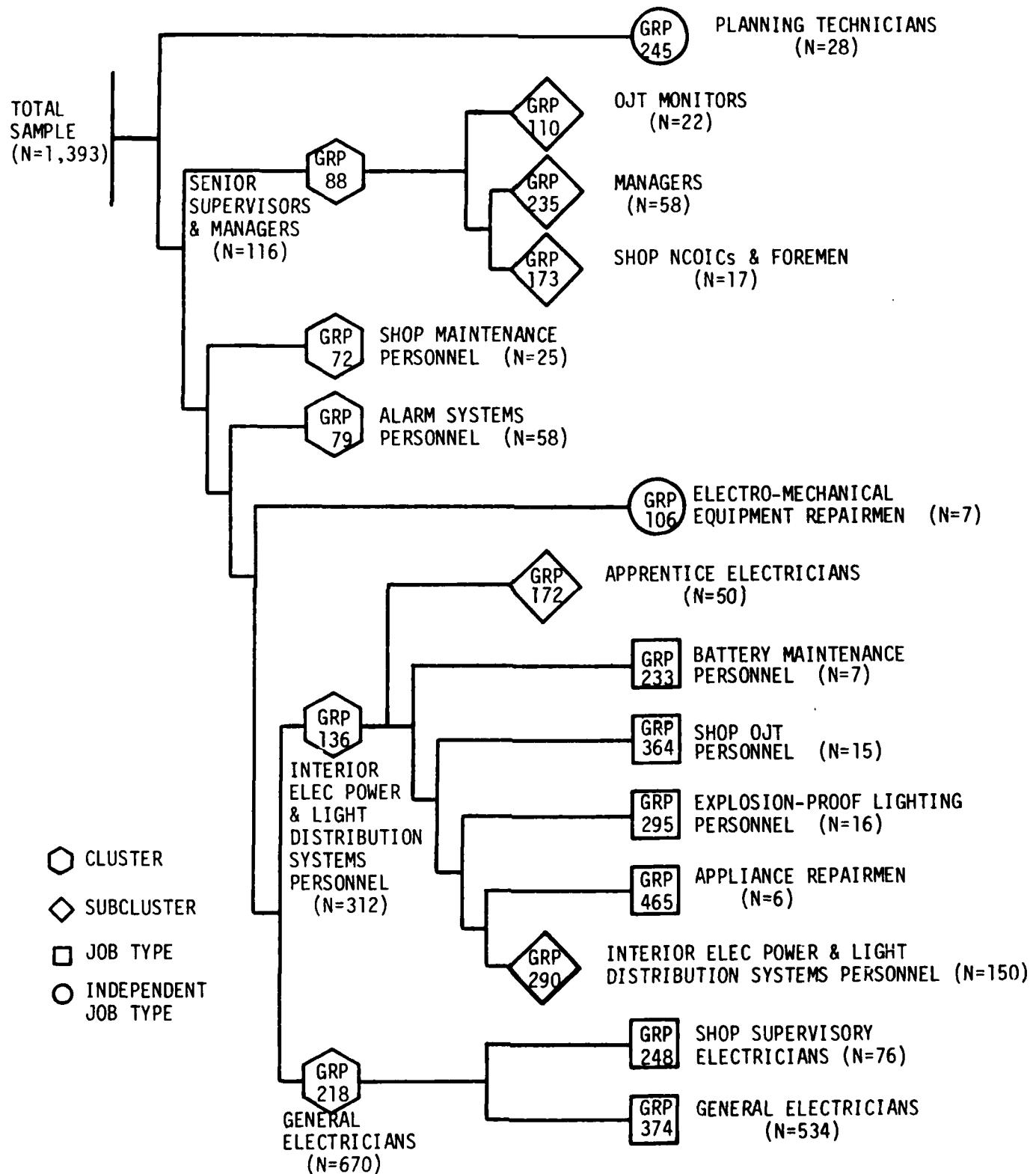
The job structure for the Electrician ladder was determined by performing a job type analysis of the 1,393 military and civilian survey respondents. Based on task similarity and the amount of time spent performing each task, the jobs performed by Air Force Electricians separated into 18 job groups, all but 4 of which grouped into 3 functional clusters. The four remaining job groups represented Electro-Mechanical Equipment Repairmen, Alarm Systems Personnel, Shop Maintenance Personnel, and Planning Technicians. The jobs performed are illustrated in Figure 1. The group (GRP) number is a reference to computer-printed information included for use by classification and training managers. The letter "N" stands for the number of people in the group.*

I. GENERAL ELECTRICIANS CLUSTER (GRP218, N=670)

- A. General Electricians (GRP374, N=534)
- B. Shop Supervisory Electricians (GRP248, N=76)

* The N for a cluster will not always equal the sum of the groups within the cluster, since only the major job variations are examined in detail.

FIGURE 1
ELECTRICIAN SPECIALTY JOB STRUCTURE



II. INTERIOR ELECTRICAL POWER AND LIGHT DISTRIBUTION SYSTEMS PERSONNEL CLUSTER (GRP136, N=312)

- A. Interior Electrical Power and Light Distribution Systems Personnel (GRP290, N=150)
- B. Appliance Repairmen (GRP465, N=6)
- C. Explosion-Proof Lighting Personnel (GRP295, N=16)
- D. Shop OJT Personnel (GRP364, N=15)
- E. Battery Maintenance Personnel (GRP223, N=7)
- F. Apprentice Electricians (GRP172, N=50)

III. ELECTRO-MECHANICAL EQUIPMENT REPAIRMEN (GRP106, N=7)

IV. ALARM SYSTEMS PERSONNEL (GRP079, N=58)

V. SHOP MAINTENANCE PERSONNEL (GRP072, N=25)

VI. SENIOR SUPERVISORS AND MANAGERS CLUSTER (GRP088, N=116)

- A. Shop NCOICs and Foremen (GRP173, N=17)
- B. Managers (GRP235, N=58)
- C. OJT Monitors (GRP110, N=22)

VIII. PLANNING TECHNICIANS (GRP245, N=28)

The respondents forming these groups account for 88 percent of the survey sample. The remaining 12 percent, though reporting similar job titles, were personnel whose task performance was too dissimilar to group them with any of their career ladder peers.

Job Descriptions

This section describes each of the jobs listed above. The information presented is limited to a brief description of the personnel who form the job group and a sample of the tasks performed which illustrate the nature of their job. Appendix A contains additional task information for each job presented.

1. GENERAL ELECTRICIANS CLUSTER (GRP218, N=670). This large group of electricians comprise 48 percent of the survey sample, and provide a view of the broadest range of work in a squadron-level interior electrical shop. The group is composed of both military (54 percent) and civilians (36 percent) and members perform an average of 149 tasks (of the 550 contained in the inventory). The installation and maintenance of interior electrical systems occupied a third of the group's job time, with tasks common to group members including:

remove and install receptacles, switches, boxes, fuses,
circuit breakers, and light bulbs
route or splice wiring or cables
inspect, clean, or service AC equipment power circuits,
controls and appliances

The second duty, capturing 29 percent of this group's job time, is installation and maintenance of electro-mechanical systems and equipment such as automatic door systems, batteries, and hangar and tail door devices. Specific tasks included:

remove or install AC appliances, AC equipment controls
and power circuits
inspect, clean or service AC equipment power circuits,
controls and appliances
clean installed equipment
splice wiring or cables
remove or install extension cords, wiring, or plugs

The remaining job time is dispersed over other inventory duties, with shop maintenance and repair of electro-mechanical equipment capturing 10 percent, and facilities and shop equipment maintenance taking 6 percent. Supervisory, administrative, and managerial duties account for 26 percent of the job time.

Within this group of electricians, there were many minor variations in time distribution across the duty areas just discussed, but only two major subgroupings:

A. General Electricians (GRP374, N=534). This group paralleled the cluster description both in civilian and military mix, number of tasks performed, and distribution of time across technical job areas. This group differed from the cluster in that only 13 percent were supervisors and only 13 percent of the job time was spent on administrative, supply, or training functions.

B. Shop Supervisory Electricians (GRP248, N=76). These are electricians who, in addition to performing the cluster-typical technical duties, spend 50 percent of their time doing supervisory and evaluative functions. This group is more senior than the cluster (E-5 or grade 10) and perform 265 tasks on the average--the most for any group reported in this survey. The civilian and military mix of approximately 50-50 continues, with 43 percent reporting their job title as Shop Supervisor. Tasks these electricians perform which make them unique include:

supervise Apprentice Electricians (AFSC 54230) and
Electricians (AFSC 54250)
direct interior power or electrical equipment installation, service, or repair functions
determine layout for installation of interior power or lighting systems
determine specifications for wiring circuit protective devices, sensors or controls
participate in meetings
perform routine or daily inspections of work area, housekeeping or safety provisions

II. INTERIOR ELECTRICAL POWER AND LIGHT DISTRIBUTION SYSTEM PERSONNEL CLUSTER (GRP136, N=312). This group of electricians comprised 22 percent of the survey sample, and revealed the more specialized nature of some electrician's work. Eighty-six percent of this group were military. The more narrow nature of their job is revealed in both average number of tasks performed (49 tasks) and time distribution across technical duties. Half of these electricians' time is spent installing and maintaining interior power and lighting systems. Average grade for members is E-3 for military and grade 9 for civilians, and a third of the members are 54230 apprentice electricians. Seventy-two percent of this cluster have been an electrician for less than 4 years.

Job time is further divided into 24 percent installation and maintenance of electro-mechanical systems and equipment, 10 percent shop equipment and facilities maintenance, and 6 percent on repair of electro-mechanical equipment. Reflecting the more junior character of this group, supervisory and managerial duties account for only 10 percent of job time.

Tasks performed in common among group members included:

remove or install light bulbs
remove or install receptacles, switches, fuses, circuit breakers and interior junction boxes
splice wiring or cables
measure, cut, run, or terminate wiring through conduits
remove or dispose of trash, waste, or materials
clean or maintain handtools or tool boxes

Within this cluster of junior personnel were variations in the jobs performed, including several small groups of people concentrating on a limited set of tasks. A discussion of these variations follows:

A. Interior Electrical Power and Light Distribution Systems Personnel (GRP290, N=150). This group mirrors the cluster description both in civilian and military mix, number of tasks performed, and distribution of time across technical job areas.

B. Appliance Repairmen (GRP465, N=6). This group of electricians, like the overall cluster, spent half their time installing and maintaining interior electrical power and light systems. They differed from the larger group in that they spent 38 percent of their remaining time installing and maintaining electro-mechanical systems and equipment--specifically unique was removal, installation, inspection, cleaning, and servicing of AC appliances. Four of the six group members were military with an average time in service of 21 months.

C. Explosion-Proof Lighting Personnel (GRP295, N=16). This small group concentrated far more job time (70 percent) on interior electrical system installation and maintenance than their cluster colleagues. This group of military and civilian electricians differed specifically in the time spent installing or removing explosion-proof receptacles, switches, fittings, and fixtures. Isolation of malfunctions in these systems was also an activity unique to this group.

D. Shop OJT Personnel (GRP364, N=15). This was a totally military group which spent more time than other cluster members conducting on-the-job training (OJT). Their primary job focus was installation and maintenance of interior electrical systems (40 percent of job time), but these E-5s conducted OJT, counseled personnel on their progress, kept OJT records, and supervised both 3- and 5-skill level electricians. Time spent on training duties was 13 percent, with 20 percent given over to supervisory and other managerial functions.

E. Battery Maintenance Personnel (GRP223, N=7). This small group of military and civilian personnel spend 44 percent of their time on the cluster-predominant duty of interior light system installation. What sets them apart from other electricians in the larger cluster is their concentration on batteries and battery banks. Specific tasks performed include:

- inspect, clean, or service batteries, battery banks, and battery chargers
- remove or install batteries, battery banks, and battery chargers
- isolate malfunctions within battery banks

The military members of this group are very junior, averaging 28 months federal service and E-3 grade. Average number of tasks performed was 46. Only one civilian, with a federal service time of 162 months, fell within this group.

F. Apprentice Electricians (GRP172, N=50). This group of personnel was over 90 percent military and very junior, averaging a grade of E-3, and performing an average of only 26 tasks. Seventy-eight percent were serving in their first enlistment. While 52 percent of the job time was spent performing tasks associated with the primary cluster duty--installation

and maintenance of interior electrical systems, these members varied considerably in the tasks they did within that duty. Given the few tasks done by each member, a picture emerges of very junior personnel doing simple tasks repeatedly. For example, this group spent more time changing light bulbs (6 percent) than any other survey group identified. Tasks done in common among these airmen and civilians included:

- removing or installing receptacles or switches, junction boxes, fuses, circuit breakers, light bulbs, and lighting fixtures
- removing or disposing of trash, waste, or materials
- tightening wiring connections
- cleaning or servicing shop vehicles

III. ELECTRO-MECHANICAL EQUIPMENT REPAIRMEN (GRP106, N=7). This independent job type was made up exclusively of civilians (grade 10) who performed an average of 67 tasks. They were unique from other survey respondents in that half of their job time was spent installing, maintaining, and repairing electro-mechanical equipment. Specific tasks which a majority of the group performed included:

- isolate malfunctions within AC motors or starters and pneumatic control system
- bench check or clean generators, motors, starters, and electro-mechanical equipment
- inspect, clean, or service AC controls
- adjust AC controls or sensors

Because much of this work is done in a shop environment, this group also spent time performing various facilities and equipment maintenance tasks:

- clean, service, or lubricate special tools or shop equipment
- perform operator maintenance on CE shop equipment and shop vehicles
- store special tools or shop equipment

IV. ALARM SYSTEMS PERSONNEL (GRP079, N=58). This group of both civilian and military electricians formed into a specialized subcluster due to the 46 percent of the job time spent on one particular class of electro-mechanical devices--intrusion and fire alarm systems. Many of these alarm systems are in overseas locations, and that is borne out by the fact that 45 percent of these personnel are serving overseas. Tasks common to these E-4s and civilian grade 10s include:

- isolate malfunctions within intrusion alarm systems
or components
- remove or install intrusion or fire alarm systems
or components
- bench check, service, or repair intrusion alarm
systems or components

Forty-eight percent of these electricians are in their first 4 years in the career field, and 22 percent of group members are supervisors. Average number of tasks comprising the jobs for these personnel is 68.

V. SHOP MAINTENANCE PERSONNEL (GRP072, N=25). This small group comprises only 2 percent of the survey sample and is predominantly military (average grade E-4). The job variation among these personnel is considerable, but the common core of their work is involved in installation of interior electrical fixtures and maintenance of shop vehicles and equipment. Tasks performed by most group members include:

- clean or service shop vehicles
- rewire lighting fixtures
- tighten wiring connections
- remove or dispose of trash, waste, or materials
- perform operator maintenance on shop vehicles
- remove or install light bulbs

Sixty percent of the group are 5-skill level personnel, and group members reported performing an average of only 27 tasks.

VI. SENIOR SUPERVISORS AND MANAGERS CLUSTER (GRP088, N=116). This group of senior military and civilian personnel (average grade E-6 or grade 9) are those electricians whose job focus has shifted to administrative and supervisory functions instead of technical electrical duties. The nature of the work is apparent in tasks commonly performed:

- supervise Electricians (AFSC 54250)
- participate in meetings
- write APRs
- coordinate work activities with other sections
- schedule work assignments and priorities
- determine work priorities
- schedule leaves and passes

This group made up 8 percent of the total survey sample. Three distinct jobs variations were identified within the cluster.

A. Shop NCOICs and Foremen (GRP173, N=17). This group is composed entirely of 5- and 7-skill level military personnel. Their average grade is E-5 and, based on the number of tasks performed (154 tasks), coupled with the degree of difficulty of those tasks, these supervisors received one of the highest job difficulty ratings for jobs identified in the survey (JDI 15.1).

The higher job difficulty rating is linked to the fact that these NCOs reported doing technical duties, as well as handling the duties of shop NCOIC or foreman. Twenty-five percent of their time was spent installing and maintaining electro-mechanical devices such as alarm systems and DC equipment. Fifteen of the group reported spending 14 percent of their time conducting OJT-related activities. The remaining job time was dispersed over supervisory and administrative tasks. Tasks representative of their jobs include:

- remove or install intrusion alarm systems or components
- bench check, service, or repair fire alarm systems
- or components
- conduct OJT
- inspect personnel for compliance with military standards
- write APRs
- evaluate performance of subordinates performing installations, repairs, servicings, and test functions
- plan work assignments or sequence of work operations

Fifty-nine percent of these NCOs were assigned to overseas installations.

B. Managers (GRP235, N=58). These electricians are both civilian (2805) and military (54270) and spend little, if any, time on technical duties. Two-thirds of job time is spent on paperwork and supervision. The vast majority reported involvement in OJT programs, with two-thirds reporting actual conducting of OJT. Some group members, however, were involved only in the record keeping and counseling aspects of OJT. Tasks dominating these jobs included:

- schedule work assignments
- supervise Electricians (AFSC 54250) and Electrical Technicians (AFSC 54270)
- direct electrical shop maintenance activities
- write correspondence
- evaluate OJT trainees or trainers
- make entries on AF Forms 1879 (BCE Job Order Record)

Average number of tasks performed by group members was 153.

C. On-The-Job Training Monitors (GRP110, N=22). These senior personnel (average grade E-6/grade 10) perform a basically managerial, supervisory job, but spend 20 percent of their time maintaining OJT records and evaluating trainees or trainers. Tasks common to this small group were:

- maintain training records, charts, or graphs
- assign on-the-job trainers or supervisors
- counsel subordinates on job progression or career development
- make entries on AF Forms 623 and 623A (On-the-Job Training Record)

VII. PLANNING TECHNICIANS (GRP245, N=28). Within the structure of each civil engineering squadron is an office (frequently called Resources and Requirements) which handles all the estimates and plans for work to be done on the base. Each year, planning technicians visit each facility on base and inspect it for any work that needs to be done (a facility survey). This survey provides part of the input for the Interservice Work Plan, a management plan for use of CE resources.

Members of this specialized job group call themselves planning technicians and, in this survey sample, both civilians (grade 9) and military (E-6s) were represented. Group members performed an average of 38 tasks. Common tasks included:

- apply engineered performance standards (EPS) in planning and estimating jobs
- perform facility surveys
- prepare AF Forms 332 (BCE Work Request)
- determine layout for installation of interior power or lighting systems
- calculate power requirements
- analyze drawings, schematics, or specifications for equipment installation

Comparison of Specialty Jobs

Selected background information, percent time spent on duties, and job satisfaction data for clusters and independent job types identified in this survey are displayed in Tables 5, 6, and 7.

Survey data identified two core jobs which accounted for 70 percent of the electricians sampled. The first, General Electrician, is a job covering the full spectrum of inventory tasks. These electricians performed the most tasks of any group (average 149) and tended to be a more experienced group (35

percent Series 2805 civilians and 33 percent 5-skill level airmen). Job focus for this large group of 670 people was installation and maintenance of both interior power and light systems and electro-mechanical systems, equipment, or devices. The second core job, Interior Power and Light Distribution Systems Personnel, is a somewhat narrower job (average tasks performed - 49), with a focus on installing and maintaining interior lighting systems. These electricians were predominantly military (83 percent), with almost three-quarters of the group in their first enlistment.

Besides the two core jobs, other unique and specialized jobs were represented. One group of civilians maintaining and repairing electro-mechanical equipment was found, as well as a small group of mostly military personnel spending more time than other electricians on shop maintenance activities. Two other jobs, Alarm Systems and Planning Technicians, reveal the very unique jobs assigned to small portions of the career ladder. Senior personnel were found in most job groups, but constituted their own group in the Senior Supervisors and Managers group, where they were performing as NCOICs, Foremen, OJT Trainers, and Managers.

Career ladder jobs were compared for difficulty using the Job Difficulty Index (JDI) described in the Task Factor Administration portion of this report. The JDI is based on the number of tasks performed and the relative difficulty of these tasks. The index ranges from 1.0 for very simple jobs to 25.0 for the most demanding jobs. This index provides an overview of jobs within a career ladder and pinpoints those jobs of increasing responsibility and broader scope. Table 5 displays this data, along with other selected background information. The most demanding jobs for Electricians are General Electrician (JDI 16.7) and Senior Supervisors and Managers (JDI 15.1). The least demanding work was done by those groups who also happen to have high percentages of junior personnel--Shop Maintenance (JDI 3.5) and Power and Light Distribution System Personnel (JDI 7.8).

Job satisfaction among Electricians was very good (see Table 7). The majority of survey respondents found their jobs interesting and believed the work was making good use of both their training and talents. Some were less enthusiastic about the sense of accomplishment gained from their work, notably Shop Maintenance Personnel, who perform fewer tasks than most Electricians. Reenlistment intentions among military respondents were also good, with a clear majority indicating the intention to reenlist.

In summary, electrician jobs formed around two core jobs, with specialized technical jobs accounting for less than 10 percent of the survey respondents. Within the core jobs, there is considerable variation in number of tasks performed and dispersion of time around those tasks, but predominant duties for the specialty remain consistent across jobs.

TABLE 5
SELECTED BACKGROUND INFORMATION FOR CLUSTERS AND INDEPENDENT JOB TYPES

	INTERIOR ELEC POWER & LIGHT DISTRIBUTION SYSTEMS	ELECTRO- MECHANICAL EQUIPMENT REPAIRMEN	ALARM SYSTEMS	SHOP MAINTENANCE PERSONNEL	SENIOR SUPERVISORS & MANAGERS	PLANNING TECHNICIANS
	GENERAL ELECTRICIANS CLUSTER (GRP136)	PERSONNEL CLUSTER (GRP106)	PERSONNEL CLUSTER (GRP079)	PERSONNEL CLUSTER (GRP072)	CLUSTER (GRP088)	CLUSTER (GRP245)
NUMBER IN GROUP	670	312	7	58	5	116
PERCENT OF TOTAL SAMPLE	48%	22%	*	4%	2%	28%
PERCENT IN CONUS	89%	73%	100%	55%	76%	71%
DISTRIBUTION (DAFSC or SERIES)						
54230	12%	21%	-	21%	12%	1%
54250	33%	47%	-	50%	60%	11%
54270	9%	4%	-	9%	8%	57%
54299	-	-	-	-	-	3%
2805	35%	14%	4.3%	16%	16%	23%
OTHER SERIES	1%	*	4.3%	6%	-	4%
						-
AVERAGE GRADE (MILITARY/CIVILIAN)	E-4/10	E-3/9	-/10	E-4/10	E-4/9	E-6/9
AVERAGE MONTHS IN CAREER FIELD	121	54	203	82	79	180
AVERAGE MONTHS IN FEDERAL SERVICE (MILITARY/CIVILIAN)	66/160	42/162	-/159	70/144	48/143	170/243
PERCENT IN CAREER FIELD LESS THAN 4 YEARS	39%	72%	-	48%	52%	2%
PERCENT SUPERVISING	19%	11%	15%	22%	-	-
AVERAGE NUMBER OF TASKS PERFORMED	149	49	67	68	27	124
JOB DIFFICULTY INDEX (JDI) (AVERAGE JDI = 13.00)	16.7	7.8	11.1	13.3	3.5	15.1
						10.3

* Less than 1 Percent
- None

TABLE 6
PERCENT TIME SPENT ON DUTIES BY ELECTRICIAN CLUSTERS AND INDEPENDENT JOB TYPES.¹

DUTIES	GENERAL ELECTRICIANS CLUSTER (GRP18)	GENERAL POWER & LIGHT DISTRIBUTION SYSTEMS PERSONNEL CLUSTER (GRP136)	INTERIOR ELECTRIC POWER & LIGHT DISTRIBUTION SYSTEMS PERSONNEL CLUSTER (GRP106)		ELECTRO-MECHANICAL EQUIPMENT REPAIRMEN IJT CLUSTER (GRP079)		ALARM SYSTEMS PERSONNEL CLUSTER (GRP072)		SHOP MAINTENANCE PERSONNEL CLUSTER (GRP072)		SENIOR SUPERVISORS & MANAGERS CLUSTER (GRP088)		PLANNING TECHNICIANS IJT CLUSTER (GRP245)		
			GENERAL ELECTRICIANS CLUSTER (GRP18)	GENERAL POWER & LIGHT DISTRIBUTION SYSTEMS PERSONNEL CLUSTER (GRP136)	GENERAL ELECTRICIANS CLUSTER (GRP106)	ELECTRO-MECHANICAL EQUIPMENT REPAIRMEN IJT CLUSTER (GRP079)	ALARM SYSTEMS PERSONNEL CLUSTER (GRP072)	SHOP MAINTENANCE PERSONNEL CLUSTER (GRP072)	SENIOR SUPERVISORS & MANAGERS CLUSTER (GRP088)	PLANNING TECHNICIANS IJT CLUSTER (GRP245)	GENERAL ELECTRICIANS CLUSTER (GRP18)	GENERAL POWER & LIGHT DISTRIBUTION SYSTEMS PERSONNEL CLUSTER (GRP136)	GENERAL ELECTRICIANS CLUSTER (GRP106)	ELECTRO-MECHANICAL EQUIPMENT REPAIRMEN IJT CLUSTER (GRP079)	ALARM SYSTEMS PERSONNEL CLUSTER (GRP072)
PLANNING AND ORGANIZING	4	2	3	4	3	4	3	3	17	27	3	14	3	14	3
DIRECTING AND IMPLEMENT	3	2	5	2	5	2	*	*	15	10	3	15	10	14	3
INSPECTING AND EVALUATING	3	1	3	3	3	3	2	2	15	10	3	14	3	14	3
TRAINING	2	2	1	1	1	3	1	1	9	18	3	9	18	9	18
PERFORMING ADMINISTRATIVE FUNCTIONS	3	3	7	3	7	3	2	2	11	13	3	4	11	4	13
PERFORMING SUPPLY AND EQUIPMENT FUNCTIONS	3	1	5	3	5	3	4	4	11	13	3	4	11	4	13
INSTALLING AND MAINTAINING INTERIOR ELECTRICAL POWER AND LIGHTING DISTRIBUTION SYSTEMS	36	49	16	20	32	7	7	7	7	15	3	7	7	7	15
INSTALLING AND MAINTAINING ELECTRO-MECHANICAL SYSTEMS, EQUIPMENT, APPLIANCES, AND DEVICES	29	24	30	46	27	7	7	7	7	7	3	7	7	7	7
PERFORMING SHOP MAINTENANCE AND REPAIR OF ELECTRO-MECHANICAL EQUIPMENT	10	6	17	8	7	7	7	7	7	7	3	3	3	3	3
MAINTAINING FACILITIES, SHOP EQUIPMENT, TOOLS, AND WORK AREAS	6	10	13	7	20	3	3	3	3	3	3	3	3	3	3

* Less than 1 Percent

¹ May not add to 100 percent due to rounding

TABLE 7
JOB SATISFACTION INFORMATION FOR CLUSTERS AND INDEPENDENT JOB TYPES
(PERCENT RESPONDING)

	GENERAL ELECTRICIANS CLUSTER (GRP218)	INTERIOR ELEC POWER & LIGHT DISTRIBUTION SYSTEMS PERSONNEL CLUSTER (GRP136)	ELECTRO-MECHANICAL EQUIPMENT REPAIRMEN IJT (GRP106)	ALARM SYSTEMS PERSONNEL CLUSTER (GRP079)	SHOP MAINTENANCE PERSONNEL CLUSTER (GRP072)	SENIOR SUPERVISORS & MANAGERS CLUSTER (GRP088)	PLANNING TECHNICIANS IJT (GRP245)
<u>HOW DO YOU FIND YOUR JOB:</u>							
DULL	2	7	7	9	4	5	7
SO-SO	7	10	7	9	24	7	18
INTERESTING	90	81	100	81	72	86	75
<u>HOW WELL DOES YOUR JOB UTILIZE YOUR TALENTS:</u>							
VERY LITTLE OR NOT AT ALL	6	17	7	15	16	9	11
FAIRLY WELL TO PERFECTLY	93	82	100	85	84	90	89
<u>HOW WELL DOES YOUR JOB UTILIZE YOUR TRAINING:</u>							
VERY LITTLE OR NOT AT ALL	8	17	14	29	24	12	18
FAIRLY WELL TO PERFECTLY	91	82	86	71	76	85	82
<u>HOW SATISFIED ARE YOU WITH THE SENSE OF ACCOMPLISHMENT GAINED FROM YOUR JOB:</u>							
DISSATISFIED	8	15	7	19	12	9	18
AMBIVALENT	6	8	7	12	28	4	11
SATISFIED	85	76	100	69	60	84	71
<u>DO YOU PLAN TO REENLIST? (542X0 ONLY)</u>							
WILL RETIRE	2	1	7	3	4	10	25
NC	11	24	7	12	16	6	7
YES	40	48	7	60	60	54	61
NO RESPONSE (CIVILIANS)	47	17	100	24	20	29	7

NOTE: Columns may not add to 100 percent due to "no response" or rounding

MILITARY AND CIVILIAN JOB DIFFERENCES

One of the primary purposes for including civilian Electricians in this survey was to examine job differences between military and civilian personnel. The SPECIALTY JOBS section of this report detailed the jobs performed by Electricians, and reveals that military and civilian Electricians perform basically similar jobs. Differences surfaced in two areas: civilians tended to do more repair and maintenance of electro-mechanical systems, as evidenced in the specialized civilian job group of Electro-Mechanical Repairmen; military personnel spent more time performing on-the-job training duties, as shown by the specialized Shop OJT and OJT Monitor job groups. It is important, however, not to overemphasize these differences. Electricians performing these jobs accounted for only 3 percent of the total survey sample. Two core jobs claimed the majority of all Electricians: (1) General Electrician, a job covering the full spectrum of inventory duties; and (2) Interior Power and Light Distribution Systems Electricians, a job focusing on installation and maintenance of interior lighting systems. Within these jobs both military and civilians were found.

A closer examination of task differences between military and civilian personnel underscores the job differences highlighted in the SPECIALTY JOBS section, and emphasizes the limited scope of those differences. Table 8 displays the tasks most distinguishing civilian Electricians from their military counterparts. The tasks shown display a full range of difficulty, with many falling within the duties of installation, maintenance, and repair of electro-mechanical systems, devices, and appliances. This is consistent with the specialized civilian job of Electro-Mechanical Repairmen. Note that the tasks shown in Table 8, though most clearly defining how civilian Electricians differ from military Electricians, account for only 14 percent of the civilian Electricians' job time. The remaining 86 percent of job time overlaps with military job time.

Similarly, Table 9 presents all tasks most clearly distinguishing military Electricians from civilians. These tasks relate directly to OJT responsibilities and management functions. Again, these tasks are consistent with the specialized OJT job groups composed of military personnel identified during job analysis. Note also that these tasks only account for 2 percent of 542X0 job time. The remaining 98 percent of time overlapped with civilian survey respondents. Clearly, Electricians, whether military or civilian, perform highly similar jobs.

TABLE 8

TASKS BEST DISTINGUISHING CIVILIAN ELECTRICIANS*

TASKS	TASK DIFFICULTY RATING	PERCENT CIVILIANS PERFORMING		PERCENT MILITARY PERFORMING		PERCENT DIFFERENCE
		PERCENT CIVILIANS	PERCENT MILITARY	PERCENT CIVILIANS	PERCENT MILITARY	
G379 REMOVE OR INSTALL STATIC GROUNDS	4.28	58	23	58	26	+35
I507 ISOLATE MALFUNCTIONS WITHIN ELECTRICALLY POWERED HANDTOOLS	4.93	58	32	58	41	+32
G259 REMOVE OR INSTALL CIRCUIT CONTROLLERS	5.48	70	41	73	43	+31
H401 INSPECT, CLEAN, OR SERVICE AC CONTROLS	4.79	73	30	73	46	+30
H392 APPLY CORROSION PREVENTIVES ON INSTALLED EQUIPMENT	3.99	46	30	46	16	+30
H386 ADJUST AC CONTROLS OR SENSORS	5.42	51	30	51	21	+30
I502 ISOLATE MALFUNCTIONS WITHIN AC MOTORS OR STARTERS	5.92	59	29	59	29	+30
G384 TEST FACILITY GROUNDING SYSTEMS	4.68	63	33	63	33	+30
G358 REMOVE OR INSTALL CATHODIC PROTECTION SYSTEMS OR COMPONENTS	6.63	42	12	42	12	+30
I540 SERVICE ELECTRICALLY POWERED TOOLS OR SHOP EQUIPMENT	4.10	57	28	57	28	+29
G342 ISOLATE MALFUNCTIONS WITHIN EXPLOSION-PROOF LIGHTING SYSTEMS	5.85	60	31	60	31	+29
G331 INSPECT OR CLEAN SYSTEM OR EQUIPMENT GROUNDS	4.25	56	27	56	27	+29
G365 REMOVE OR INSTALL EXPLOSION-PROOF DISTRIBUTION SYSTEMS	6.39	60	32	60	32	+28
H403 INSPECT, CLEAN, OR SERVICE AC EQUIPMENT POWER CIRCUITS	4.66	68	40	68	40	+28
H390 ADJUST OR ALIGN SHEAVES, PULLEYS, OR LIMITING SWITCHES	4.62	59	3	59	3	+28
G341 ISOLATE MALFUNCTIONS WITHIN EXPLOSION-PROOF DISTRIBUTION SYSTEMS	6.19	53	25	53	25	+28
G335 REMOVE OR INSTALL AC POWER METERS	4.48	44	16	44	16	+28
J545 PERFORM OPERATOR MAINTENANCE ON CIVIL ENGINEERING SHOP EQUIPMENT	3.05	63	35	63	35	+28
H394 CADWELL CATHODIC PROTECTION SYSTEMS	5.38	35	7	35	7	+28
G351 MEASURE, CUT, FAN, OR FORM WIRING HARNESES	4.81	60	32	60	32	+28
G380 REMOVE OR INSTALL SYSTEM OR EQUIPMENT GROUNDS	4.43	74	46	74	46	+28
H461 REMOVE OR INSTALL AC TRANSFORMERS	5.19	65	38	65	38	+27
I503 ISOLATE MALFUNCTIONS WITHIN AC TRANSFORMERS	5.79	48	21	48	21	+27
I538 REWIRE MAGNETIC CONTROLS	5.44	57	30	57	30	+27
I515 REMOVE OR INSTALL MOTOR CONTROL CENTERS	5.97	48	21	48	21	+27
G322 INSPECT OR CLEAN EXPLOSION-PROOF FITTINGS AND FIXTURES	4.78	52	25	52	25	+27

* Tasks shown account for 8 percent (military) and 14 percent (civilian) of job time

TABLE 8 (CONTINUED)

TASKS BEST DISTINGUISHING CIVILIAN ELECTRICIANS*

TASKS	TASK DIFFICULTY RATING	PERCENT CIVILIANS PERFORMING		PERCENT MILITARY PERFORMING		PERCENT DIFFERENCE
		PERCENT CIVILIANS PERFORMING	PERCENT MILITARY PERFORMING	PERCENT CIVILIANS PERFORMING	PERCENT MILITARY PERFORMING	
H395	CLEAN INSTALLED EQUIPMENT	3.76	63	36	+27	
H457	REMOVE OR INSTALL AC EQUIPMENT CONTROLS	5.34	72	45	+27	
H463	REMOVE OR INSTALL AUTOMATIC DOOR SYSTEM COMPONENTS	5.82	49	23	+26	
H399	INSPECT INSTALLATION OF ELECTRO-MECHANICAL SYSTEMS, EQUIPMENT, OR DEVICES	4.87	42	16	+26	
I517	REMOVE OR INSTALL MOTOR CONTROL UNITS	5.78	53	27	+26	
I528	REWIRE AC EQUIPMENT OR STARTERS	5.99	45	19	+26	
H389	ADJUST OR ALIGN DRIVE BELTS	4.17	39	13	+26	
H466	REMOVE OR INSTALL BATTERY CHARGERS	4.62	46	20	+26	

* Tasks shown account for 8 percent (military) and 14 percent (civilian) of job time

TABLE 9
TASKS BEST DISTINGUISHING MILITARY ELECTRICIANS*

TASKS	TASK DIFFICULTY RATING	PERCENT MILITARY PERFORMING	PERCENT CIVILIANS PERFORMING	PERCENT DIFFERENCE
D181 MAKE ENTRIES ON AF FORMS 623 AND 623A (ON-THE-JOB TRAINING RECORD)	4.15	30	6	+24
C140 WRITE AIRMAN PERFORMANCE REPORTS	5.54	29	6	+23
C125 INSPECT PERSONNEL FOR COMPLIANCE WITH MILITARY STANDARDS	3.98	29	8	+21
B54 COUNSEL SUBORDINATES ON PERSONAL OR MILITARY-RELATED MATTERS	5.18	27	9	+17
D177 MAINTAIN TRAINING RECORDS, CHARTS, OR GRAPHS	4.43	19	7	+12
D178 MAKE ENTRIES ON AF FORMS 1096 (CDC STATUS RECORD)	3.61	14	3	+11
D155 COUNSEL TRAINEES ON TRAINING PROGRESS	4.46	21	10	+11
A25 ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	4.68	22	11	+11
D182 MAKE ENTRIES ON AF FORMS 797 (JOB QUALIFICATION STANDARD CONTINUATION)	3.87	13	3	+10

* Tasks shown account for 2 percent (military) and .04 percent (civilian) of job time

ANALYSIS OF DAFSC AND CIVILIAN GROUPS

An analysis of DAFSC groups, in conjunction with the analysis of the specialty jobs, is an important part of each occupational analysis. This analysis identifies differences in task and duty performance at various skill levels. Such information can then be used to assess how accurately career ladder documents, such as AFR 39-1 Specialty Descriptions and the Specialty Training Standard (STS), reflect what career ladder personnel are doing in the field. A summary of civilian Electricians' (Series 2805) work is also included for comparative purposes.

DAFSC 54230/50: These 730 Electricians' time is concentrated within the two broad technical duties for this specialty (see Table 10). Thirty-eight percent of their time is spent working with interior power and light distribution systems, and 26 percent of their time is spent installing and maintaining electro-mechanical systems and equipment. Tasks common to this group included installation or removal of basic electrical components such as switches, receptacles, fuses, circuit breakers, junction boxes, and light bulbs. Measuring, cutting, or bending of common materials included thin wall tubing or conduit, flexible metallic and nonmetallic wiring, and rigid conduit. Lesser amounts of job time are spent on maintenance of electro-mechanical equipment (7 percent) and maintenance of shop facilities and equipment (8 percent). Shop tasks common to these personnel were:

- perform operator maintenance on shop vehicles
- clean or service shop vehicles
- remove or dispose of trash, waste, or materials
- clean or maintain hand tools or tool boxes
- store special tools or shop equipment

Three- and five-skill level personnel were found in all job groups discussed in the SPECIALTY JOBS section of this report, except for the Senior Supervisor and Managers group and the highly specialized Appliance Repairmen, which was exclusively civilian. Jobs in which these skill levels formed a majority included Alarm Systems Personnel, the Interior Power and Lighting Distribution Systems cluster, the Installation and Maintenance of Electro-Mechanical Systems cluster, and Shop Maintenance Personnel.

DAFSC 54270: These more senior personnel spent the majority of their time accomplishing supervisory and managerial duties. Technical electrician duties still occupied approximately a third of their time, although few individual technical tasks were performed by a majority of 7-skill level personnel. Tasks performed in common by most 7-skill level electricians included:

- coordinate work activities with other sections
or agencies
- determine specifications for wiring, circuit protective
devices, sensors, or controls

write APRs
 participate in meetings
 counsel subordinates on personal or military-related
 matters
 remove or install fuses or circuit breakers
 supervisor Electricians (AFSC 54250)
 store special tools or shop equipment

Seven-skill level electricians were found in most SPECIALTY JOB groups but were a majority of the Senior Supervisors and Managers cluster and Planning Technicians group.

Civilian Series 2805: The overwhelming majority of civilians responding to this survey (94 percent) were serving in the civil service Electrician Series 2805. As Table 10 reflects, overall job time is distributed much like job time for DAFSC 54230/50 military personnel. The largest amount of time was split between interior lighting systems (34 percent) and electro-mechanical systems and equipment installation and maintenance (27 percent). Tasks performed in common by civilians serving in this series included removal and installation of switches, receptacles, fuses, circuit breakers, light bulbs and interior power controls and isolating malfunctions in AC distribution, lighting and control systems. Civilian Electricians were found in all specialty jobs described, with the exception of the Shop OJT, Shop Maintenance, and Shop NCOICs and Foremen groups. Civilians alone formed the highly specialized group called Electro-Mechanical Equipment Repairmen.

TABLE 10

RELATIVE TIME SPENT ON DUTIES BY 542X0 SKILL-LEVEL
AND CIVILIAN GROUPS

DUTIES	54230/50 PERSONNEL	54270 PERSONNEL	TOTAL CIVILIAN
A ORGANIZING AND PLANNING	4	15	6
B DIRECTING AND IMPLEMENTING	3	10	3
C INSPECTING AND EVALUATING	3	10	4
D TRAINING	3	10	2
E PERFORMING ADMINISTRATIVE FUNCTIONS	4	8	4
F PERFORMING SUPPLY AND EQUIPMENT FUNCTIONS	3	8	4
G INSTALLING AND MAINTAINING INTERIOR ELECTRICAL POWER AND LIGHTING DISTRIBUTION SYSTEMS	38	18	34
H INSTALLING AND MAINTAINING ELECTRO-MECHANICAL SYSTEMS, EQUIPMENT, APPLIANCES AND DEVICES	26	12	27
I PERFORMING SHOP MAINTENANCE AND REPAIR OF ELECTRO-MECHANICAL EQUIPMENT	7	4	11
J MAINTAINING FACILITIES, SHOP EQUIPMENT, TOOLS, AND WORK AREAS	8	5	6

COMPARISON OF SURVEY DATA TO AFR 39-1 AND JOB GRADING STANDARD - SERIES 2805

To verify the completeness and accuracy of the 542X0 specialty description, survey data were compared to the April 1984 AFR 39-1 Specialty Descriptions. The descriptions are complete, well supported by survey data, and accurately portray the duties and responsibilities of Air Force Electricians. No duties or responsibilities were omitted nor were any trends noted during analysis of career ladder structure which would require changes in the specialty descriptions at this time.

Also reviewed was the job grading standard for the 2805 series, Electrician (dated April 1969), as personnel with this series made up the vast majority of civilian respondents for this study. Survey data confirmed that the electrical worker at grade 8 level is involved almost exclusively in repairs involving removal, replacement, splicing, and tightening. At the grade 10 level, respondents were doing similar work, but also did troubleshooting and more planning and laying out of work. The 2805 standard appears to adequately reflect the work of civilian Electricians.

MAJOR COMMAND AND CONUS-OVERSEAS ANALYSES

Occupational survey data are analyzed from many different perspectives. Included are examinations of field data to highlight differences, if any, in jobs across major commands, and a comparison of specialty jobs in the continental U.S. (CONUS) and those in overseas locations. Within the 542X0 specialty no major differences were found in Electrician's work across major commands or in CONUS versus overseas jobs.

JOB SATISFACTION ANALYSIS

Job inventories routinely collect respondents' attitudes toward their jobs, the use their job makes of their talents and training, and reenlistment intentions. This summarized information is referred to as job satisfaction data and is provided to give career field managers a sense of the mood within a specialty. A negative trend in this data over time, or in relation to comparative surveyed specialties, may suggest the need for managerial review to determine what specialty irritations are within their power to modify.

Table 11 displays the job satisfaction information for 542X0 personnel surveyed. Regardless of time in career field, Electricians reported good job satisfaction and higher reenlistment intentions than the comparative sample. First-enlistment personnel reported their jobs interesting (85 percent) and utilization of both talent (89 percent) and training (90 percent) very good. Reenlistment intentions for the 1-48 TAFMS group were comparable to the comparative sample, with 64 percent of Electricians planning to reenlist. Both of the more senior groups also had good job satisfaction and talent or training utilization figures, though the percentages were somewhat lower than for the first-enlistment group.

TABLE 11

JOB SATISFACTION INDICES FOR 542X0 EXPERIENCE GROUPS
(PERCENT MEMBERS RESPONDING)

	1-48 MONTHS		49-96 MONTHS		97+ MONTHS	
	542X0 PERS (N=466)	COMP SAMPLE* (N=5,741)	542X0 PERS (N=187)	COMP SAMPLE* (N=2,345)	542X0 PERS (N=281)	COMP SAMPLE* (N=3,564)
<u>EXPRESSED JOB INTEREST:</u>						
DULL	4	22	9	16	6	11
SO-SO	9	20	11	16	11	13
INTERESTING	85	57	80	66	81	75
<u>PERCEIVED UTILIZATION OF TALENTS:</u>						
LITTLE OR NOT AT ALL	10	35	14	27	15	19
FAIRLY WELL OR BETTER	89	64	86	72	84	81
<u>PERCEIVED UTILIZATION OF TRAINING:</u>						
LITTLE OR NOT AT ALL	10	22	20	24	18	20
FAIRLY WELL OR BETTER	90	78	80	76	80	82
<u>REENLISTMENT INTENTIONS:</u>						
PLAN TO RETIRE	-	-	1	1	13	13
PLAN NOT TO REENLIST	31	36	21	21	5	7
PLAN TO REENLIST	64	62	77	77	80	79

NOTE: Columns may not add to 100 percent due to no response and rounding

* 1984 comparative sample taken from Direct Support Specialties: 231X2, 542X2, 545X2, 552X1, 552X3,
566X1, 811X0, 811X2/A

ANALYSIS OF EXPERIENCE GROUPS (TAFMS)

The jobs performed by survey respondents in different Total Active Federal Military Service (TAFMS) were examined to determine if there were differences in work performed. The 542X0 members fit the pattern seen in most career ladders. As time in service increased, there was a steady increase in performance of duties involving supervision and management tasks, accompanied by a corresponding decrease in technical task performance. Table 12 displays this time spent information across inventory duties for experience groups.

1-48 Months TAFMS Personnel

Figure 2 shows the distribution of 1-48 months personnel across the major job groups described in the SPECIALTY JOBS section of this report. Half of the junior Electricians fell within the General Electricians Cluster. These Electricians perform a broad job and averaged performing 149 tasks. The majority of job time was spent on installation and maintenance of both interior power systems and electro-mechanical systems, devices, and equipment.

Forty-three percent of first-enlistment Electricians' work was captured in the Interior Power and Light Distribution System Cluster. These Electricians performed a narrower job, concentrating more on installation and maintenance of interior power systems. Smaller groups of first-enlistment personnel were working in jobs concentrating on alarm systems (5 percent) and shop maintenance (2 percent).

Table 13 displays all tasks performed in common by 50 percent or more of 1-48 months Electricians. This group is the most relevant reference for examining ABR training programs. Thus, this group is highlighted to provide a foundation for examination of career field training. Most of the tasks shown relate to the basic technical duties of the specialty, as well as what the SPECIALTY JOBS section showed was the primary activity of junior Electricians--installation and maintenance of interior power and lighting systems, and their devices.

FIGURE 2
DISTRIBUTION OF 1-48 TAFMS PERSONNEL ACROSS SPECIALTY JOBS
(PERCENT MEMBERS RESPONDING)

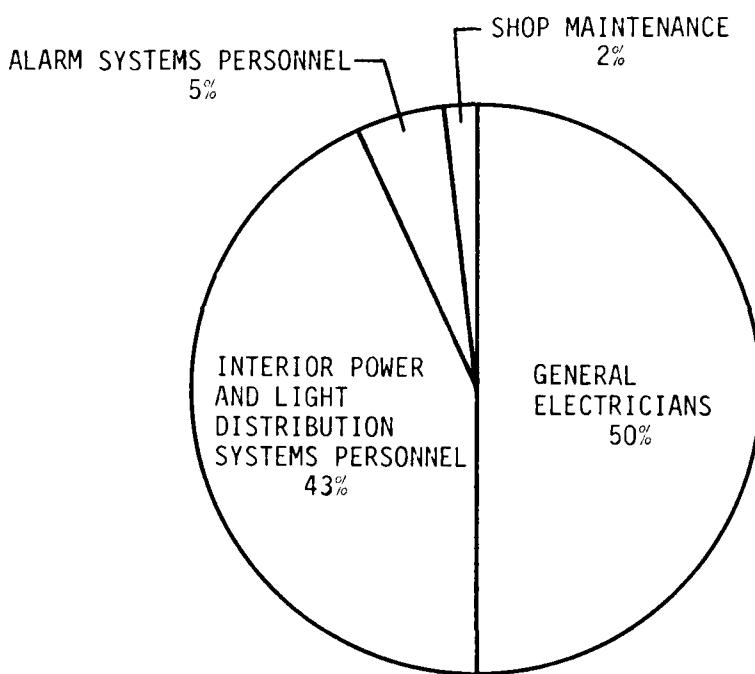


TABLE 12

PERCENT TIME SPENT ON DUTIES BY 542X0 EXPERIENCE GROUPS
(RELATIVE TIME SPENT)

DUTIES	EXPERIENCE GROUPS (MONTHS TAFMS)					
	1-48 (N=466)	49-96 (N=187)	97-144 (N=114)	145-192 (N=97)	193-240 (N=56)	241+ (N=14)
A ORGANIZING AND PLANNING	3	6	10	16	17	19
B DIRECTING AND IMPLEMENTING	2	5	7	10	11	15
C INSPECTING AND EVALUATING	2	5	6	9	11	16
D TRAINING	1	6	9	8	9	9
E PERFORMING ADMINISTRATIVE FUNCTIONS	3	4	6	8	10	9
F PERFORMING SUPPLY AND EQUIPMENT FUNCTIONS	2	4	6	7	10	9
G INSTALLING AND MAINTAINING INTERIOR ELECTRICAL POWER AND LIGHTING DISTRIBUTION SYSTEMS	42	31	25	19	16	11
H INSTALLING AND MAINTAINING ELECTRO-MECHANICAL SYSTEMS, EQUIPMENT, APPLIANCES, AND DEVICES	28	24	19	13	10	6
I PERFORMING SHOP MAINTENANCE AND REPAIR OF ELECTRO-MECHANICAL EQUIPMENT	8	7	5	3	2	1
J MAINTAINING FACILITIES, SHOP EQUIPMENT, TOOLS, AND WORK AREAS	9	7	6	4	4	5

TABLE 13

ALL TASKS PERFORMED BY 50 PERCENT OR MORE 1-48 MONTHS 542X0 PERSONNEL

<u>TASKS</u>	<u>PERCENT PERFORMING</u>
G368 REMOVE OR INSTALL FUSES OR CIRCUIT BREAKERS	89
G369 REMOVE OR INSTALL INTERIOR JUNCTION, RECEPTACLE, OR SWITCH BOXES	86
G350 MEASURE, CUT, BEND, FIT, OR ATTACH THIN WALL TUBING OR CONDUITS	84
G352 MEASURE, CUT, RUN, OR TERMINATE WIRING THROUGH CONDUITS	82
H487 SPLICE WIRING OR CABLES	82
H480 REMOVE OR INSTALL LIGHT BULBS	81
G377 REMOVE OR INSTALL RECEPTACLES OR SWITCHES, OTHER THAN EXPLOSION PROOF	80
J549 REMOVE OR DISPOSE OF TRASH, WASTE, OR MATERIALS	80
H488 TIGHTEN WIRING CONNECTIONS	79
G353 MEASURE, CUT, THREAD, BEND, OR FIT RIGID CONDUITS OR PIPES	77
G382 ROUTE WIRING OR CABLES	77
G348 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE METALLIC WIRING INSTALLATIONS	76
J542 CLEAN OR MAINTAIN HANDTOOLS OR TOOL BOXES	75
G349 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE NON-METALLIC CABLES	74
J543 CLEAN OR SERVICE SHOP VEHICLES, SUCH AS MOBILE VANS AND SERVICE TRUCKS	73
G347 MEASURE, CHISEL, CHUT, OR DRILL STRUCTURES	71
G357 REMOVE OR INSTALL BATTERY EMERGENCY LIGHTING UNITS	71
G354 REMOVE OR INSTALL AC EMERGENCY LIGHTING UNITS	69
I537 REWIRE LIGHTING FIXTURES	67
H476 REMOVE OR INSTALL EXTENSION CORDS, WIRING, OR PLUGS, OTHER THAN PORTABLE AIRCRAFT-TYPE CANNON PLUGS	64
G372 REMOVE OR INSTALL LIGHTING FIXTURES, OTHER THAN IN MOBILE EXHIBIT VANS, PORTABLE THEATERS, OR SPECIAL DISPLAYS	64
G334 INSPECT OR SERVICE EMERGENCY BATTERY LIGHTING UNITS	62
G367 REMOVE OR INSTALL EXPLOSION PROOF RECEPTACLES OR SWITCHES	62
G363 REMOVE OR INSTALL DISTRIBUTION PANELS	61
G383 SOLDER ELECTRICAL CONNECTIONS	60
G366 REMOVE OR INSTALL EXPLOSION PROOF FITTINGS AND FIXTURES	59
G375 REMOVE OR INSTALL PHOTO CELLS FOR SECURITY LIGHTING	59
G343 ISOLATE MALFUNCTIONS WITHIN LIGHTING SYSTEMS	58
H456 REMOVE OR INSTALL AC EQUIPMENT	58
G381 REPAIR DEFECTIVE POWER DISTRIBUTION WIRING	57
G370 REMOVE OR INSTALL INTERIOR POWER CONTROLS	55
J550 STORE SPECIAL TOOLS OR SHOP EQUIPMENT	55
H458 REMOVE OR INSTALL AC EQUIPMENT POWER CIRCUITS	55
G376 REMOVE OR INSTALL PROTECTIVE DEVICES	54
J546 PERFORM OPERATOR MAINTENANCE ON SHOP VEHICLES	54

TABLE 13 (CONTINUED)

ALL TASKS PERFORMED BY 50 PERCENT OR MORE 1-48 MONTHS 542X0 PERSONNEL

<u>TASKS</u>	<u>PERCENT PERFORMING</u>
G328 INSPECT OR CLEAN RECEPTACLES OR SWITCHES	53
G336 INSULATE OR TERMINATE WIRING	52
H464 REMOVE OR INSTALL BATTERIES	51
G324 INSPECT OR CLEAN INTERIOR JUNCTION, RECEPTACLE, OR SWITCH BOXES	50
H455 REMOVE OR INSTALL AC APPLIANCES	50
G320 INSPECT OR CLEAN DISTRIBUTION PANELS	50
H402 INSPECT, CLEAN, OR SERVICE AC EQUIPMENT	50
H457 REMOVE OR INSTALL AC EQUIPMENT CONTROLS	50
G337 ISOLATE MALFUNCTIONS ON AC DISTRIBUTION SYSTEMS	50

TRAINING ANALYSIS

Occupational survey data provide information which can assist training managers in the development of training programs relevant to the needs of personnel working in their first assignment within a career ladder. Factors which can be used to evaluate training are the percent of first-job (1-24 months TAFMS) or first 4 years in the career field (1-48 months TAFMS) members performing tasks, along with training emphasis (TE) and task difficulty (TD) ratings (as discussed in the Task Factor Administration section). These factors were used to examine the Specialty Training Standard (STS) and the Plan of Instruction (POI) for Course 3ABR54230, Electrician. Training personnel from the 3700 Technical Training Wing, Sheppard AFB, Texas, matched inventory tasks to appropriate sections of the POI and STS. It was this matching upon which comparisons were based. A complete computer listing displaying the percent members performing, TE ratings, and TD ratings for each task statement, along with POI and STS matchings, was forwarded to the school for their use in any further detailed review of training documents.

Training Emphasis and Task Difficulty Data

Training emphasis and task difficulty data can be used to provide information on training needs as perceived by experienced technicians within the specialty. Comparisons can then be made between this information and present training programs to determine if course adjustments are needed.

Thirty-seven senior Electricians provided TE ratings on each task within the job inventory. These ratings resulted in an average rating of 2.05, with a standard deviation of 1.64. Thus, all tasks rated above 3.69 are those considered important in training for personnel new to the career ladder. Thirty-four senior career Electricians provided ratings for TD information. These ratings are standardized so average TD is 5.00, with a standard deviation of 1.00. Therefore, all tasks rated 6.00 or better are considered difficult tasks within the 542X0 career ladder. The objective of this data collection is to develop ordered listings of those items which should be considered for training. These complete lists of inventory tasks, either in the order of relative TD or TE, are included in the Analysis Extract and Task Difficulty and Training Emphasis ratings accompany each inventory task displayed in the Training Extract. (The Task Factor Administration section in the INTRODUCION gives a more detailed explanation of both types of data.)

Table 14 provides examples of tasks dispersed over the range of TE ratings. Because the TE and TD ratings are the composite opinion of experienced career ladder personnel on training for a 1-48 TAFMS person, listings of the TE rating rank order can assist training developers in deciding what tasks should be emphasized in entry-level training. Tasks receiving high ratings on both task factors accompanied by moderate to high personnel performing percentages may warrant resident training. Those tasks receiving

high task factor ratings, but low personnel performing percentages, may be more appropriately planned for OJT programs within the career field. For example, the task "inspect, clean, or service power converters" is a difficult task (TD=6.20), but is only performed by 6 percent of the 1-48 TAFMS group and only 7 percent of the total Electrician sample perform the task. This task probably should be taught only to those who are in jobs requiring it, rather than included in initial skill training. Low task factor ratings may highlight tasks best left out of training for new 542X0 personnel, but this decision must be weighed against percent performing data, command concerns, and criticality of the task to readiness, contingency planning, or safety programs.

Specialty Training Standard (STS)

A review of STS 542X0, dated August 1978, compared STS sections to survey data. Paragraphs containing general information or subject-matter proficiency requirements were not evaluated.

Survey data supported the present STS. All major technical paragraphs showed acceptable percentages of Electricians performing the duties outlined. Some tasks with 20 percent or more Electricians performing them were unmatched to the STS. These tasks related to fire and intrusion alarm systems, and dealt with isolating malfunctions, inspection, cleaning, or servicing these systems. Specific tasks were:

- H421 Inspect, clean, or service intrusion alarm systems or components
- H418 Inspect, clean, or service fire alarm systems or components
- H439 Isolate malfunctions within fire alarm systems or components
- H441 Isolate malfunctions within intrusion alarm systems or components
- I497 Bench check, service, or repair fire alarm systems or components

Although responsibilities for the maintenance of such systems is in transition and presently shared with 545X3, Civil Engineering Control Systems personnel, survey data confirms that 20-25 percent of 542X0 personnel still perform fire and intrusion alarm system responsibilities. Depending upon the final AFS distribution of these duties, the 542X0 STS should be adjusted accordingly to reflect the Electrician's revised role.

Plan of Instruction (POI)

Based on previously mentioned assistance from training specialists at Sheppard AFB, Texas, the 3ABR54230 POI, dated March 1984, was matched with survey task statements, and a computer printout was generated displaying the results of this process. Information furnished includes TE and

TD ratings, as well as percent members performing data for first-job (1-24 months TAFMS) and first 4 years of military service (1-48 TAFMS) groups.

Survey data supported all POI blocks. One block is recommended for additional emphasis in two areas--Hazardous Locations and Emergency Lighting Systems. Table 15 presents the task data suggesting this revision. Block II, Units 8 and 9, are currently knowledge only subjects; however, both percent of first-enlistment performing figures and very high TE ratings indicate a need for additional coverage of explosion-proof systems and components, as well as emergency lighting units.

Tasks performed by most first-enlistment Electricians are covered in the entry course POI. There was one task not matched, however, which is suggested for review for inclusion in training:

remove or install photo cells for security lighting

Fifty-nine percent of first-enlistment personnel report performing this task and experienced Electricians gave it a high TE rating (4.84).

In summary, the 3ABR54230 POI basically is well aligned with first-enlistment jobs with only minor revisions recommended in those areas previously described. Complete STS and POI matches with the survey data are available in the TRAINING EXTRACT and should be reviewed by training managers for further enhancements of their training program.

TABLE 14

EXAMPLES OF TASKS ILLUSTRATING RANGE OF TRAINING EMPHASIS RATINGS^{**}
FOR 542X0 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING		
	TRAINING EMPHASIS	TASK DIFFICULTY	1-48 TAFMS SAMPLE
G352 MEASURE, CUT, RUN, OR TERMINATE WIRING THROUGH CONDUITS	6.62	4.25	82 73
G354 REMOVE OR INSTALL AC EMERGENCY LIGHTING UNITS	6.05	4.14	69 58
G342 ISOLATE MALFUNCTIONS WITHIN EXPLOSION PROOF LIGHTING	5.00	5.85	36 31
J549 REMOVE OR DISPOSE OF TRASH, WASTE OR MATERIALS	4.76	1.30	80 71
G358 REMOVE OR INSTALL CATHODIC PROTECTION SYSTEMS OR COMPONENTS	4.32	6.63	13 12
J550 STORE SPECIAL TOOLS OR SHOP EQUIPMENT	4.16	2.43	55 54
I502 ISOLATE MALFUNCTIONS WITHIN AC MOTORS OR STARTERS	3.87	5.92	31 29
H434 ISOLATE MALFUNCTIONS WITHIN BATTERY BANKS	3.27	5.55	17 17
H389 ADJUST OR ALIGN DRIVE BELTS	2.62	4.17	14 13
G314 INSPECT OR CLEAN AC POWER METERS	2.49	4.79	12 11
H387 ADJUST BATTERY CHARGERS	2.16	4.90	15 16
H426 INSPECT, CLEAN, OR SERVICE POWER CONVERTERS	1.95	6.20	6 7
F280 MAINTAIN BENCHSTOCK LEVELS	1.73	5.18	6 10
I509 REFACE COMMUTATORS AND SLIP RINGS	1.14	5.69	5 3
I535 REWIRE DC MOTORS	1.00	6.34	5 3
F271 EVALUATE EQUIPMENT STORAGE PROCEDURES	.76	4.81	2 5
I519 REWIND AC EQUIPMENT OR STARTERS	.57	6.95	2 1
E215 MAINTAIN SECURITY FORMS ON SAFES, RECORDS, OR ROOMS	.35	3.76	* 2
A42 PREPARE UNIT EMERGENCY PLANS	.05	5.44	2

* Less than 1 percent

** Range = .00-6.62; Mean 2.05

TABLE 15
POI BLOCKS SUGGESTED FOR CHANGE FROM KNOWLEDGE ONLY TO STUDENT PERFORMANCE

POI BLOCK	TASK	PERCENT MEMBERS PERFORMING		
		TNG EMP*	TNG DIFF	1-48 MONTHS
II8. HAZARDOUS LOCATIONS	G365 REMOVE OR INSTALL EXPLOSION PROOF DISTRIBUTION SYSTEMS	5.00	6.39	37
	G366 REMOVE OR INSTALL EXPLOSION PROOF FITTINGS AND FIXTURES	5.00	6.14	59
	G367 REMOVE OR INSTALL EXPLOSION PROOF RECEPTACLES OR SWITCHES	5.00	5.85	62
	G342 ISOLATE MALFUNCTIONS WITHIN EXPLOSION PROOF LIGHTING SYSTEMS	5.00	5.85	36
II9. EMERGENCY LIGHTING SYSTEMS	G354 REMOVE OR INSTALL AC EMERGENCY LIGHTING UNITS	6.05	4.14	69
	G357 REMOVE OR INSTALL BATTERY EMERGENCY LIGHTING UNITS	5.38	4.11	71
	G334 INSPECT OR SERVICE EMERGENCY BATTERY LIGHTING UNITS	5.08	4.17	62

* Mean Rating: 2.05 SD: 1.64
High Rating = $2.05 + 1.64 = 3.69+$

STRENGTH AND STAMINA COMMENTS

Several personnel who completed task difficulty booklets reported a problem among Electricians with lifting heavy equipment overhead for installation or maintenance of items high on a wall or ceiling. This concern is best summarized in the words of one of the NCOs commenting on this problem: "Most devices in this area [explosion proof fittings and fixtures] are considerably heavy and normally located at extreme heights. If no provisions are incorporated for lowering the devices to the floor for maintenance, it normally requires the technician to use a platform or boom operation to reach them. At some point during the removal/reinstallation, he will usually have to hyper-extend the torso to support the repair. Repeated repairs of this nature have, in my experience, resulted in temporary back muscle discomfort--regardless of the technician's age, physical condition, or experience at performing the task." Tasks specifically mentioned by these Electricians included inspecting, cleaning, removing, installing, and isolating malfunctions in explosion-proof fittings and fixtures. These tasks are performed by substantial percentages of the 542X0 personnel sampled: 25 percent inspect or clean, 48 percent remove or install, and 31 percent isolate malfunctions.

Other NCOs mentioned difficulty with installation and removal of large conductors as a problem for physically smaller personnel, and that bending conduit is normally accomplished in teams to achieve the strength required. One NCO recommended a minimum standard for an Electrician be lifting 60 pounds. Present X-factor is a "3"--able to perform standard light duty over normal work periods (as demonstrated by a lift of 40 pounds to elbow height). A review of the adequacy of the present strength and stamina requirements for interior Electricians is recommended based upon the write-in comments to this survey.

SPECIAL ISSUES

During the survey process, information was collected to address several items of interest to career ladder training managers. These items included percentages of Electricians doing AC or DC motor repair, maintenance of batteries or battery banks, and an examination of who is performing on-the-job training (OJT) for this career ladder. An additional analysis was performed to examine task performance differences between electricians who received directed duty assignments (DDA) and those who attended technical training prior to their first assignment. No task performance differences were noted.

Task level data gathered from survey respondents indicate about a fourth of military Electricians perform AC motor repair; less than 10 percent of military personnel work on DC motors. Specific tasks with percent performing information is shown in Table 16. Civilians are consistently more involved in this work than military Electricians.

Also in Table 16 are the specific tasks and percent performing information on Electricians' work with batteries and battery banks. Servicing batteries is done by approximately 40 percent of military field Electricians, with 5-skill levels predominating. Care of battery banks is performed by a third of first-enlistment personnel, but the more complex task of troubleshooting battery banks is accomplished by only 17 percent of the surveyed 542X0 Electricians. Again, survey data reveal civilians are consistently more involved in this work.

The issue of who performs OJT for Electricians is a critical one due to the high number of entry-level personnel who are sent to their first job as a directed duty assignment (DDA). Currently, only half of new Air Force Electricians receive training at Sheppard AFB, Texas. This results in an understandably heavy field OJT load. Survey data reveal the bulk of this load is carried by 54270 personnel. This task data is further confirmed by the two jobs involving OJT identified in the SPECIALTY JOBS section of this report. Both of these jobs, Shop OJT Personnel and OJT Monitors, were filled with 7-skill level personnel. One civilian was also involved in these groups conducting OJT. Table 16 presents a task list showing this information in more detail.

TABLE 16

SPECIAL ISSUES TASK LEVEL DATA BY CAREER FIELD GROUPS
(PERCENT PERFORMING)

MOTOR REPAIR	TOTAL			TOTAL			TOTAL CIVILIANS PERFORMING
	542X0 PERFORMING	54270 PERFORMING	54250 PERFORMING	FIRST-ENL PERFORMING	FIRST-ENL PERFORMING	FIRST-ENL PERFORMING	
1502 ISOLATE MALFUNCTIONS WITHIN AC MOTORS OR STARTERS	29	22	33	31	4	5	59
1521 REWIND AC MOTORS	2	1	3	19	19	19	5
1530 REWIRE AC MOTORS	14	10	15	25	25	25	25
1505 ISOLATE MALFUNCTIONS WITHIN DC MOTORS OR STARTERS	7	3	8	8	8	8	21
1525 REWIND DC MOTORS	1	1	1	1	1	1	4
1535 REWIRE DC MOTORS	3	0	4	5	5	5	8
<u>BATTERIES AND BATTERY BANKS</u>							
H407 INSPECT, CLEAN, OR SERVICE BATTERIES H464 REMOVE OR INSTALL BATTERIES	40	26	44	44	44	44	58
1494 BENCH CHECK, SERVICE, OR REPAIR BATTERIES	44	26	52	51	51	51	62
H408 INSPECT, CLEAN, OR SERVICE BATTERY BANKS	24	18	28	24	24	24	40
H434 ISOLATE MALFUNCTIONS WITHIN BATTERY BANKS	28	20	41	30	30	30	46
H465 REMOVE OR INSTALL BATTERY BANKS	17	11	20	17	17	17	36
	19	12	22	20	20	20	40
<u>ON-THE-JOB TRAINING (OJT)</u>							
D150 CONDUCT OJT	28	46	28	13	13	13	31
D155 COUNSEL TRAINEES ON TRAINING PROGRAM	21	47	17	5	5	5	10
D159 DETERMINE OJT TRAINING REQUIREMENTS	13	35	9	2	2	2	8
D166 DIRECT OR IMPLEMENT OJT TRAINING PROGRAMS	10	26	7	3	3	3	8
D170 EVALUATE OJT TRAINEES OR TRAINERS	16	39	13	3	3	3	10
D181 MAKE ENTRIES ON AF FORMS 623 AND 623A (ON-THE-JOB TRAINING RECORD)	30	61	27	7	7	7	6
D184 MOTIVATE OJT TRAINERS AND TRAINEES	20	40	18	8	8	8	14
D187 PLAN OJT	10	27	7	2	2	2	10

COMPARISON TO PREVIOUS SURVEY

Results of this survey were compared to those of the last occupational survey of the Electrician career ladder published in October 1977 (Report Number: AFPT 90-542-088). Sample size for the 1984 survey was larger, 1,393 versus 1,259, but approximately a third of the 1984 survey was composed of civilian Electricians.

Jobs identified in the two surveys were remarkably consistent. Both surveys found general Electricians performing a large, diverse job; interior power and light distribution Electricians, who performed a more limited job; planning technicians, and OJT supervisors. Two slight variations from the 1977 job pattern were found: (1) in 1984, all alarm systems specialized personnel formed into one group with no breakout by fire or intrusion alarm systems as in the 1977 data; (2) the last survey identified small groups of inspectors and quality control evaluators. The 1984 data revealed these personnel grouping with either the senior supervisor group or with planning technicians.

Other than these minor job variations, other data, such as job satisfaction and skill-level analysis, remained similar. The 542X0 career ladder has been relatively stable since 1977 and there is no evidence in the 1984 data to suggest this career field is undergoing major shifts in emphasis.

IMPLICATIONS

Survey data reveal military and civilian Electricians performing basic jobs in common with civilians doing more electro-mechanical equipment repair and maintenance, and military performing more of the on-the-job training (OJT) so necessary for this specialty. Two core jobs were identified for this specialty: (1) General Electrician, a job covering the full spectrum of inventory duties; and (2) Interior Power and Light Distribution Systems Electricians, a job focusing predominantly on installation and maintenance of interior lighting systems.

Career ladder documents, to include AFR 39-1 Specialty Descriptions, the Specialty Training Standard (STS), and the entry-level course Plan of Instruction (POI), were well supported by survey data. A recommendation for performance-level training on explosion-proof systems and emergency lighting systems (presently knowledge level only) was included based on percentages of first-enlistment personnel doing this work, as well as experienced Electricians giving these areas high training emphasis (TE) ratings for junior personnel. Otherwise, the basic course at Sheppard AFB is well structured to support jobs of first-enlistment Electricians.

Several write-in comments focused on the physical difficulty Electricians experience lifting heavy equipment overhead for installation or maintenance of items high on a wall or ceiling; other comments included the difficulty of removal or installation of large conductors. Present X-factor for this specialty is a "3"--able to perform standard light duty over normal work periods. Recommend a review of present strength and stamina requirements based upon write-in comments to this survey.

APPENDIX A
TASKS PERFORMED BY JOB GROUP MEMBERS

TABLE A1
GENERAL ELECTRICIANS CLUSTER
(GRP218)

<u>TASKS*</u>	<u>PERCENT MEMBERS PERFORMING (N=670)</u>
G369 REMOVE OR INSTALL INTERIOR JUNCTION, RECEPTACLE, OR SWITCH BOXES	99
G368 REMOVE OR INSTALL FUSES OR CIRCUIT BREAKERS	99
G352 MEASURE, CUT, RUN, OR TERMINATE WIRING THROUGH CONDUITS	97
G382 ROUTE WIRING OR CABLES	97
G350 MEASURE, CUT, BEND, FIT, OR ATTACH THIN WALL TUBING OR CONDUITS	97
G377 REMOVE OR INSTALL RECEPTACLES OR SWITCHES, OTHER THAN EXPLOSION PROOF	97
G353 MEASURE, CUT, THREAD, BEND, OR FIT RIGID CONDUITS OR PIPES	97
G348 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE METALLIC WIRING INSTALLATIONS	95
H480 REMOVE OR INSTALL LIGHT BULBS	94
H488 TIGHTEN WIRING CONNECTIONS	93
G370 REMOVE OR INSTALL INTERIOR POWER CONTROLS	92
G357 REMOVE OR INSTALL BATTERY EMERGENCY LIGHTING UNITS	92
J542 CLEAN OR MAINTAIN HANDTOOLS OR TOOL BOXES	92
G349 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE NON-METALLIC CABLES	91
H487 SPLICING WIRING OR CABLES	91
J549 REMOVE OR DISPOSE OF TRASH, WASTE, OR MATERIALS	91
G354 REMOVE OR INSTALL AC EMERGENCY LIGHTING UNITS	91
H456 REMOVE OR INSTALL AC EQUIPMENT	91
G347 MEASURE, CHISEL, CUT, OR DRILL STRUCTURES	90
G363 REMOVE OR INSTALL DISTRIBUTION PANELS	90
H458 REMOVE OR INSTALL AC EQUIPMENT POWER CIRCUITS	90
G381 REPAIR DEFECTIVE POWER DISTRIBUTION WIRING	90
G380 REMOVE OR INSTALL SYSTEM OR EQUIPMENT GROUNDS	89
H476 REMOVE OR INSTALL EXTENSION CORDS, WIRING, OR PLUGS, OTHER THAN PORTABLE AIRCRAFT-TYPE CANNON PLUGS	89
G367 REMOVE OR INSTALL EXPLOSION PROOF RECEPTACLES OR SWITCHES	89
I537 REWIRE LIGHTING FIXTURES	88
H401 INSPECT, CLEAN, OR SERVICE AC CONTROLS	87
G383 SOLDER ELECTRICAL CONNECTIONS	87
G375 REMOVE OR INSTALL PHOTO CELLS FOR SECURITY LIGHTING	87
J543 CLEAN OR SERVICE SHOP VEHICLES, SUCH AS MOBILE VANS AND SERVICE TRUCKS	86

Average Number of Tasks Performed: 149
* Tasks shown account for 26 percent of job time

TABLE A2

GENERAL ELECTRICIANS
(GRP374)

<u>TASKS*</u>	<u>PERCENT MEMBERS PERFORMING (N=534)</u>
G369 REMOVE OR INSTALL INTERIOR JUNCTION, RECEPTACLE, OR SWITCH BOXES	100
G368 REMOVE OR INSTALL FUSES OR CIRCUIT BREAKERS	99
G350 MEASURE, CUT, BEND, FIT, OR ATTACH THIN WALL TUBING OR CONDUITS	98
G352 MEASURE, CUT, RUN, OR TERMINATE WIRING THROUGH CONDUITS	98
G377 REMOVE OR INSTALL RECEPTACLES OR SWITCHES, OTHER THAN EXPLOSION PROOF	98
G382 ROUTE WIRING OR CABLES	97
G353 MEASURE, CUT, THREAD, BEND, OR FIT RIGID CONDUITS OR PIPES	97
H488 TIGHTEN WIRING CONNECTIONS	96
G348 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE METALLIC WIRING INSTALLATIONS	95
H480 REMOVE OR INSTALL LIGHT BULBS	94
H456 REMOVE OR INSTALL AC EQUIPMENT	93
G370 REMOVE OR INSTALL INTERIOR POWER CONTROLS	93
G357 REMOVE OR INSTALL BATTERY EMERGENCY LIGHTING UNITS	93
J549 REMOVE OR DISPOSE OF TRASH, WASTE, OR MATERIALS	93
H458 REMOVE OR INSTALL AC EQUIPMENT POWER CIRCUITS	92
H487 SPLICE WIRING OR CABLES	92
G347 MEASURE, CHISEL, CUT, OR DRILL STRUCTURES	92
J542 CLEAN OR MAINTAIN HANDTOOLS OR TOOL BOXES	92
G354 REMOVE OR INSTALL AC EMERGENCY LIGHTING UNITS	92
G349 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE NON-METALLIC CABLES	91
G363 REMOVE OR INSTALL DISTRIBUTION PANELS	91
H401 INSPECT, CLEAN, OR SERVICE AC CONTROLS	90
G367 REMOVE OR INSTALL EXPLOSION PROOF RECEPTACLES OR SWITCHES	90
H476 REMOVE OR INSTALL EXTENSION CORDS, WIRING, OR PLUGS, OTHER THAN PORTABLE AIRCRAFT-TYPE CANNON PLUGS	90
G381 REPAIR DEFECTIVE POWER DISTRIBUTION WIRING	90
G380 REMOVE OR INSTALL SYSTEM OR EQUIPMENT GROUNDS	90
H457 REMOVE OR INSTALL AC EQUIPMENT CONTROLS	89
I537 REWIRE LIGHTING FIXTURES	89
H403 INSPECT, CLEAN, OR SERVICE AC EQUIPMENT POWER CIRCUITS	88
G366 REMOVE OR INSTALL EXPLOSION PROOF FITTINGS AND FIXTURES	88

Average Number of Tasks Performed: 136

* Tasks shown account for 28 percent of job time

TABLE A3
SHOP SUPERVISORY ELECTRICIANS
(GRP248)

<u>TASKS*</u>	<u>PERCENT MEMBERS PERFORMING (N=76)</u>
G369 REMOVE OR INSTALL INTERIOR JUNCTION, RECEPTACLE, OR SWITCH BOXES	99
G368 REMOVE OR INSTALL FUSES OR CIRCUIT BREAKERS	97
G352 MEASURE, CUT, RUN, OR TERMINATE WIRING THROUGH CONDUITS	97
G348 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE METALLIC WIRING INSTALLATIONS	97
G350 MEASURE, CUT, BEND, FIT, OR ATTACH THIN WALL TUBING OR CONDUITS	96
G382 ROUTE WIRING OR CABLES	96
G353 MEASURE, CUT, THREAD, BEND, OR FIT RIGID CONDUITS OR PIPES	96
G349 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE NON-METALLIC CABLES	96
G380 REMOVE OR INSTALL SYSTEM OR EQUIPMENT GROUNDS	96
G381 REPAIR DEFECTIVE POWER DISTRIBUTION WIRING	95
H456 REMOVE OR INSTALL AC EQUIPMENT	95
E234 MAKE ENTRIES ON AF FORMS 267 (ELECTRICAL DANGER--MEN AT WORK)	95
G357 REMOVE OR INSTALL BATTERY EMERGENCY LIGHTING UNITS	95
J550 STORE SPECIAL TOOLS OR SHOP EQUIPMENT	93
H480 REMOVE OR INSTALL LIGHT BULBS	93
G377 REMOVE OR INSTALL RECEPTACLES OR SWITCHES, OTHER THAN EXPLOSION PROOF	93
J542 CLEAN OR MAINTAIN HANDTOOLS OR TOOL BOXES	93
G370 REMOVE OR INSTALL INTERIOR POWER CONTROLS	93
G376 REMOVE OR INSTALL PROTECTIVE DEVICES	93
G354 REMOVE OR INSTALL AC EMERGENCY LIGHTING UNITS	93
G359 REMOVE OR INSTALL CIRCUIT CONTROLLERS	93
G367 REMOVE OR INSTALL EXPLOSION PROOF RECEPTACLES OR SWITCHES	93
G363 REMOVE OR INSTALL DISTRIBUTION PANELS	92
G334 INSPECT OR SERVICE EMERGENCY BATTERY LIGHTING UNITS	92
H401 INSPECT, CLEAN, OR SERVICE AC CONTROLS	92
G383 SOLDER ELECTRICAL CONNECTIONS	92
A48 SCHEDULE WORK ASSIGNMENTS AND PRIORITIES	91
J548 PERFORM ROUTINE OR DAILY INSPECTIONS OF WORK AREA ENVIRONMENT, HOUSEKEEPING, OR SAFETY PROVISIONS	91
A29 PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	91
H458 REMOVE OR INSTALL AC EQUIPMENT POWER CIRCUITS	91

Average Number of Tasks Performed: 265
* Tasks shown account for 12 percent of job time

TABLE A4

INTERIOR ELECTRICAL POWER AND LIGHT DISTRIBUTION
SYSTEMS PERSONNEL CLUSTER
(GRP136)

<u>TASKS*</u>	<u>PERCENT MEMBERS PERFORMING (N=312)</u>
G368 REMOVE OR INSTALL FUSES OR CIRCUIT BREAKERS	95
G369 REMOVE OR INSTALL INTERIOR JUNCTION, RECEPTACLE, OR SWITCH BOXES	94
G377 REMOVE OR INSTALL RECEPTACLES OR SWITCHES, OTHER THAN EXPLOSION PROOF	93
G350 MEASURE, CUT, BEND, FIT, OR ATTACH THIN WALL TUBING OR CONDUITS	86
G352 MEASURE, CUT, RUN, OR TERMINATE WIRING THROUGH CONDUITS	88
H480 REMOVE OR INSTALL LIGHT BULBS	85
G348 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE METALLIC WIRING INSTALLATIONS	80
H487 SPLICING WIRING OR CABLES	79
J549 REMOVE OR DISPOSE OF TRASH, WASTE, OR MATERIALS	79
G349 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE NON-METALLIC CABLES	78
H488 TIGHTEN WIRING CONNECTIONS	76
G353 MEASURE, CUT, THREAD, BEND, OR FIT RIGID CONDUITS OR PIPES	75
G382 ROUTE WIRING OR CABLES	75
J542 CLEAN OR MAINTAIN HANDTOOLS OR TOOL BOXES	72
G347 MEASURE, CHISEL, CUT, OR DRILL STRUCTURES	72
G357 REMOVE OR INSTALL BATTERY EMERGENCY LIGHTING UNITS	71
G372 REMOVE OR INSTALL LIGHTING FIXTURES, OTHER THAN IN MOBILE EXHIBIT VANS, PORTABLE THEATERS, OR SPECIAL DISPLAYS	69
G354 REMOVE OR INSTALL AC EMERGENCY LIGHTING UNITS	68
J543 CLEAN OR SERVICE SHOP VEHICLES, SUCH AS MOBILE VANS AND SERVICE TRUCKS	67
I537 REWIRE LIGHTING FIXTURES	63
H476 REMOVE OR INSTALL EXTENSION CORDS, WIRING, OR PLUGS, OTHER THAN PORTABLE AIRCRAFT-TYPE CANNON PLUGS	63
G375 REMOVE OR INSTALL PHOTO CELLS FOR SECURITY LIGHTING	57
G363 REMOVE OR INSTALL DISTRIBUTION PANELS	55
G367 REMOVE OR INSTALL EXPLOSION PROOF RECEPTACLES OR SWITCHES	54
G334 INSPECT OR SERVICE BATTERY EMERGENCY LIGHTING UNITS	52
G366 REMOVE OR INSTALL EXPLOSION PROOF FITTINGS AND FIXTURES	50
J546 PERFORM OPERATOR MAINTENANCE ON SHOP VEHICLES	48
G383 SOLDER ELECTRICAL CONNECTIONS	48
G343 ISOLATE MALFUNCTIONS WITHIN LIGHTING SYSTEMS	48
G381 REPAIR DEFECTIVE POWER DISTRIBUTION WIRING	45

Average Number of Tasks Performed: 49

* Tasks shown account for 54 percent of job time

TABLE A5
INTERIOR ELECTRICAL POWER AND LIGHT DISTRIBUTION SYSTEMS PERSONNEL
(GRP290)

<u>TASKS*</u>	<u>PERCENT MEMBERS PERFORMING (N=150)</u>
G368 REMOVE OR INSTALL FUSES OR CIRCUIT BREAKERS	100
G369 REMOVE OR INSTALL INTERIOR JUNCTION, RECEPTACLE, OR SWITCH BOXES	97
G377 REMOVE OR INSTALL RECEPTACLES OR SWITCHES, OTHER THAN EXPLOSION PROOF	95
H480 REMOVE OR INSTALL LIGHT BULBS	95
G350 MEASURE, CUT, BEND, FIT, OR ATTACH THIN WALL TUBING OR CONDUITS	92
G352 MEASURE, CUT, RUN, OR TERMINATE WIRING THROUGH CONDUITS	90
H487 SPLICE WIRING OR CABLES	87
G348 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE METALLIC WIRING INSTALLATIONS	87
G349 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE NON-METALLIC CABLES	87
J549 REMOVE OR DISPOSE OF TRASH, WASTE, OR MATERIALS	86
H488 TIGHTEN WIRING CONNECTIONS	85
G382 ROUTE WIRING OR CABLES	83
G372 REMOVE OR INSTALL LIGHTING FIXTURES, OTHER THAN IN MOBILE EXHIBIT VANS, PORTABLE THEATERS, OR SPECIAL DISPLAYS	82
G347 MEASURE, CHISEL, CUT, OR DRILL STRUCTURES	82
G353 MEASURE, CUT, THREAD, BEND, OR FIT RIGID CONDUITS OR PIPES	82
J542 CLEAN OR MAINTAIN HANDTOOLS OR TOOL BOXES	79
G357 REMOVE OR INSTALL BATTERY EMERGENCY LIGHTING UNITS	77
H476 REMOVE OR INSTALL EXTENSION CORDS, WIRING, OR PLUGS, OTHER THAN PORTABLE AIRCRAFT-TYPE CANNON PLUGS	76
I537 REWIRE LIGHTING FIXTURES	73
J543 CLEAN OR SERVICE SHOP VEHICLES, SUCH AS MOBILE VANS AND SERVICE TRUCKS	73
G354 REMOVE OR INSTALL AC EMERGENCY LIGHTING UNITS	73
G375 REMOVE OR INSTALL PHOTO CELLS FOR SECURITY LIGHTING	66
G363 REMOVE OR INSTALL DISTRIBUTION PANELS	64
H367 REMOVE OR INSTALL EXPLOSION PROOF RECEPTACLES OR SWITCHES	63
G366 REMOVE OR INSTALL EXPLOSION PROOF FITTINGS AND FIXTURES	59
G343 ISOLATE MALFUNCTIONS WITHIN LIGHTING SYSTEMS	59
G381 REPAIR DEFECTIVE POWER DISTRIBUTION WIRING	56
H458 REMOVE OR INSTALL AC EQUIPMENT POWER CIRCUITS	54
G334 INSPECT OR SERVICE EMERGENCY BATTERY LIGHTING UNITS	54
H456 REMOVE OR INSTALL AC EQUIPMENT	53

Average Number of Tasks Performed: 52
* Tasks shown account for 57 percent of job time

TABLE A6
APPLIANCE REPAIRMEN
(GRP465)

TASKS*	PERCENT MEMBERS PERFORMING (N=6)
H457 REMOVE OR INSTALL AC EQUIPMENT CONTROLS	100
H456 REMOVE OR INSTALL AC EQUIPMENT	100
G370 REMOVE OR INSTALL INTERIOR POWER CONTROLS	100
G368 REMOVE OR INSTALL FUSES OR CIRCUIT BREAKERS	100
G369 REMOVE OR INSTALL INTERIOR JUNCTION, RECEPTACLE, OR SWITCH BOXES	100
H487 SPLICE WIRING OR CABLES	100
G377 REMOVE OR INSTALL RECEPTACLES OR SWITCHES, OTHER THAN EXPLOSION PROOF	100
H455 REMOVE OR INSTALL AC APPLIANCES	100
G353 MEASURE, CUT, THREAD, BEND, OR FIT RIGID CONDUITS OR PIPES	100
H480 REMOVE OR INSTALL LIGHT BULBS	100
H401 INSPECT, CLEAN, OR SERVICE AC CONTROLS	100
H402 INSPECT, CLEAN, OR SERVICE AC EQUIPMENT	100
G367 REMOVE OR INSTALL EXPLOSION PROOF RECEPTACLES OR SWITCHES	100
H488 TIGHTEN WIRING CONNECTIONS	100
G366 REMOVE OR INSTALL EXPLOSION PROOF FITTINGS AND FIXTURES	100
G365 REMOVE OR INSTALL EXPLOSION PROOF DISTRIBUTION SYSTEMS	100
G348 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE METALLIC WIRING INSTALLATIONS	100
G352 MEASURE, CUT, RUN, OR TERMINATE WIRING THROUGH CONDUITS	83
G363 REMOVE OR INSTALL DISTRIBUTION PANELS	83
G382 ROUTE WIRING OR CABLES	83
G359 REMOVE OR INSTALL CIRCUIT CONTROLLERS	83
H400 INSPECT, CLEAN, OR SERVICE AC APPLIANCES	83
H403 INSPECT, CLEAN, OR SERVICE AC EQUIPMENT POWER CIRCUITS	83
G354 REMOVE OR INSTALL AC EMERGENCY LIGHTING UNITS	83
G357 REMOVE OR INSTALL BATTERY EMERGENCY LIGHTING UNITS	83
G381 REPAIR DEFECTIVE POWER DISTRIBUTION WIRING	83
G375 REMOVE OR INSTALL PHOTO CELLS FOR SECURITY LIGHTING	83
H549 REMOVE OR DISPOSE OF TRASH, WASTE, OR MATERIALS	83
H406 INSPECT, CLEAN, OR SERVICE AUTOMATIC DOOR SYSTEMS	67
H476 REMOVE OR INSTALL EXTENSION CORDS, WIRING, OR PLUGS, OTHER THAN PORTABLE AIRCRAFT-TYPE CANNON PLUGS	67

Average Number of Tasks Performed: 62
* Tasks shown account for 55 percent of job time

TABLE A7
EXPLOSION-PROOF LIGHTING PERSONNEL
(GRP295)

TASKS*	PERCENT MEMBERS PERFORMING (N=16)
G369 REMOVE OR INSTALL INTERIOR JUNCTION, RECEPTACLE, OR SWITCH BOXES	100
G350 MEASURE, CUT, BEND, FIT, OR ATTACH THIN WALL TUBING OR CONDUITS	100
G368 REMOVE OR INSTALL FUSES OR CIRCUIT BREAKERS	100
G367 REMOVE OR INSTALL EXPLOSION PROOF RECEPTACLES OR SWITCHES	100
G357 REMOVE OR INSTALL BATTERY EMERGENCY LIGHTING UNITS	100
G352 MEASURE, CUT, RUN, OR TERMINATE WIRING THROUGH CONDUITS	94
G366 REMOVE OR INSTALL EXPLOSION PROOF FITTINGS AND FIXTURES	94
G377 REMOVE OR INSTALL RECEPTACLES OR SWITCHES, OTHER THAN EXPLOSION PROOF	88
G349 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE NON-METALLIC CABLES	88
G363 REMOVE OR INSTALL DISTRIBUTION PANELS	88
G382 ROUTE WIRING OR CABLES	81
J549 REMOVE OR DISPOSE OF TRASH, WASTE, OR MATERIALS	81
G353 MEASURE, CUT, THREAD, BEND, OR FIT RIGID CONDUITS OR PIPES	81
G348 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE METALLIC WIRING INSTALLATIONS	81
G375 REMOVE OR INSTALL PHOTO CELLS FOR SECURITY LIGHTING	81
H347 MEASURE, CHISEL, CUT, OR DRILL STRUCTURES	81
H383 SOLDER ELECTRICAL CONNECTIONS	81
J542 CLEAN OR MAINTAIN HANDTOOLS OR TOOL BOXES	75
J543 CLEAN OR SERVICE SHOP VEHICLES, SUCH AS MOBILE VANS AND SERVICE TRUCKS	69
G378 REMOVE OR INSTALL SERVICE ENTRANCES OR WEATHERHEADS	69
G365 REMOVE OR INSTALL EXPLOSION PROOF DISTRIBUTION SYSTEMS	69
G334 INSPECT OR SERVICE EMERGENCY BATTERY LIGHTING UNITS	63
G370 REMOVE OR INSTALL INTERIOR POWER CONTROLS	63
G342 ISOLATE MALFUNCTIONS WITHIN EXPLOSION PROOF LIGHTING SYSTEMS	63
G381 REPAIR DEFECTIVE POWER DISTRIBUTION WIRING	56
G380 REMOVE OR INSTALL SYSTEM OR EQUIPMENT GROUNDS	56
G343 ISOLATE MALFUNCTIONS WITHIN LIGHTING SYSTEMS	50
G336 INSULATE OR TERMINATE WIRING	50
G379 REMOVE OR INSTALL STATIC GROUNDS	50

Average Number of Tasks Performed: 47

* Tasks shown account for 54 percent of job time

TABLE A8

SHOP OJT PERSONNEL
(GRP364)

TASKS*	PERCENT MEMBERS PERFORMING (N=15)
G377 REMOVE OR INSTALL RECEPTACLES OR SWITCHES, OTHER THAN EXPLOSION PROOF	100
G368 REMOVE OR INSTALL FUSES OR CIRCUIT BREAKERS	100
B53 COUNSEL SUBORDINATES ON JOB PROGRESSION OR CAREER DEVELOPMENT	100
H487 SPLICE WIRING OR CABLES	93
G382 ROUTE WIRING OR CABLES	93
H488 TIGHTEN WIRING CONNECTIONS	93
G352 MEASURE, CUT, RUN, OR TERMINATE WIRING THROUGH CONDUITS	93
B83 SUPERVISE APPRENTICE ELECTRICIANS (AFSC 54230)	93
D181 MAKE ENTRIES ON AF FORMS 623 AND 623A (ON-THE-JOB TRAINING RECORD)	93
J549 REMOVE OR DISPOSE OF TRASH, WASTE, OR MATERIALS	93
G349 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE NON-METALLIC CABLES	93
G348 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE METALLIC WIRING INSTALLATIONS	93
H480 REMOVE OR INSTALL LIGHT BULBS	87
G372 REMOVE OR INSTALL LIGHTING FIXTURES, OTHER THAN IN MOBILE EXHIBIT VANS, PORTABLE THEATERS, OR SPECIAL DISPLAYS	87
G369 REMOVE OR INSTALL INTERIOR JUNCTION, RECEPTACLE, OR SWITCH BOXES	87
G347 MEASURE, CHISEL, CUT, OR DRILL STRUCTURES	87
D150 CONDUCT OJT	87
C140 WRITE AIRMAN PERFORMANCE REPORTS	87
J542 CLEAN OR MAINTAIN HANDTOOLS OR TOOL BOXES	80
J546 PERFORM OPERATOR MAINTENANCE ON SHOP VEHICLES	80
G350 MEASURE, CUT, BEND, FIT, OR ATTACH THIN WALL TUBING OR CONDUITS	80
D155 COUNSEL TRAINEES ON TRAINING PROGRESS	80
G357 REMOVE OR INSTALL BATTERY EMERGENCY LIGHTING UNITS	80
G354 REMOVE OR INSTALL AC EMERGENCY LIGHTING UNITS	80
G353 MEASURE, CUT, THREAD, BEND, OR FIT RIGID CONDUITS OR PIPES	80
B86 SUPERVISE ELECTRICIANS (AFSC 54250)	73
J543 CLEAN OR SERVICE SHOP VEHICLES, SUCH AS MOBILE VANS AND SERVICE TRUCKS	73
G363 REMOVE OR INSTALL DISTRIBUTION PANELS	73
B54 COUNSEL SUBORDINATES ON PERSONAL OR MILITARY-RELATED MATTERS	73

Average Number of Tasks Performed: 47

* Tasks shown account for 45 percent of job time

TABLE A9
BATTERY MAINTENANCE PERSONNEL
(GRP223)

<u>TASKS*</u>	<u>PERCENT MEMBERS PERFORMING (N=7)</u>
G334 INSPECT OR SERVICE EMERGENCY BATTERY LIGHTING UNITS	100
H407 INSPECT, CLEAN, OR SERVICE BATTERIES	100
H464 REMOVE OR INSTALL BATTERIES	100
G357 REMOVE OR INSTALL BATTERY EMERGENCY LIGHTING UNITS	100
G354 REMOVE OR INSTALL AC EMERGENCY LIGHTING UNITS	100
G352 MEASURE, CUT, RUN, OR TERMINATE WIRING THROUGH CONDUITS	100
I537 REWIRE LIGHTING FIXTURES	86
H409 INSPECT, CLEAN, OR SERVICE BATTERY CHARGERS	86
G369 REMOVE OR INSTALL INTERIOR JUNCTION, RECEPTACLE, OR SWITCH BOXES	86
H466 REMOVE OR INSTALL BATTERY CHARGERS	86
G350 MEASURE, CUT, BEND, FIT, OR ATTACH THIN WALL TUBING OR CONDUITS	86
G348 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE METALLIC WIRING INSTALLATIONS	86
G349 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE NON-METALLIC CABLES	86
J549 REMOVE OR DISPOSE OF TRASH, WASTE, OR MATERIALS	71
G377 REMOVE OR INSTALL RECEPTACLES OR SWITCHES, OTHER THAN EXPLOSION PROOF	71
H480 REMOVE OR INSTALL LIGHT BULBS	71
H408 INSPECT, CLEAN, OR SERVICE BATTERY BANKS	71
H465 REMOVE OR INSTALL BATTERY BANKS	71
G368 REMOVE OR INSTALL FUSES OR CIRCUIT BREAKERS	71
H476 REMOVE OR INSTALL EXTENSION CORDS, WIRING, OR PLUGS, OTHER THAN PORTABLE AIRCRAFT-TYPE CANNON PLUGS	71
J543 CLEAN OR SERVICE SHOP VEHICLES, SUCH AS MOBILE VANS AND SERVICE TRUCKS	71
J542 CLEAN OR MAINTAIN HANDTOOLS OR TOOL BOXES	71
G382 ROUTE WIRING OR CABLES	71
H434 ISOLATE MALFUNCTIONS WITHIN BATTERY BANKS	57
G372 REMOVE OR INSTALL LIGHTING FIXTURES, OTHER THAN IN MOBILE EXHIBIT VANS, PORTABLE THEATERS, OR SPECIAL DISPLAYS	57
G383 SOLDER ELECTRICAL CONNECTIONS	57
G353 MEASURE, CUT, THREAD, BEND, OR FIT RIGID CONDUITS OR PIPES	57
G319 INSPECT OR CLEAN DC STANDBY POWER DISTRIBUTION SYSTEMS	43
H414 INSPECT, CLEAN, OR SERVICE DC STANDBY SYSTEMS	43
G343 ISOLATE MALFUNCTIONS WITHIN LIGHTING SYSTEMS	43

Average Number of Tasks Performed: 46

* Tasks shown account for 56 percent of job time

TABLE A10
APPRENTICE ELECTRICIANS
(GRP172)

TASKS*	PERCENT MEMBERS PERFORMING (N=50)
G377 REMOVE OR INSTALL RECEPTACLES OR SWITCHES, OTHER THAN EXPLOSION PROOF	92
G369 REMOVE OR INSTALL INTERIOR JUNCTION, RECEPTACLE, OR SWITCH BOXES	90
G368 REMOVE OR INSTALL FUSES OR CIRCUIT BREAKERS	84
G352 MEASURE, CUT, RUN, OR TERMINATE WIRING THROUGH CONDUITS	82
G350 MEASURE, CUT, BEND, FIT, OR ATTACH THIN WALL TUBING OR CONDUITS	80
G487 SPLICE WIRING OR CABLES	76
H480 REMOVE OR INSTALL LIGHT BULBS	70
J549 REMOVE OR DISPOSE OF TRASH, WASTE, OR MATERIALS	70
G372 REMOVE OR INSTALL LIGHTING FIXTURES, OTHER THAN IN MOBILE EXHIBIT VANS, PORTABLE THEATERS, OR SPECIAL DISPLAYS	64
H488 TIGHTEN WIRING CONNECTIONS	62
J543 CLEAN OR SERVICE SHOP VEHICLES, SUCH AS MOBILE VANS AND SERVICE TRUCKS	60
G348 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE METALLIC WIRING INSTALLATIONS	58
J542 CLEAN OR MAINTAIN HANDTOOLS OR TOOL BOXES	56
G349 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE NON-METALLIC CABLES	54
G353 MEASURE, CUT, THREAD, BEND, OR FIT RIGID CONDUITS OR PIPES	52
G357 REMOVE OR INSTALL BATTERY EMERGENCY LIGHTING UNITS	48
I537 REWIRE LIGHTING FIXTURES	46
G382 ROUTE WIRING OR CABLES	46
G347 MEASURE, CHISEL, CUT, OR DRILL STRUCTURES	46
G354 REMOVE OR INSTALL AC EMERGENCY LIGHTING UNITS	46
J546 PERFORM OPERATOR MAINTENANCE ON SHOP VEHICLES	42
H476 REMOVE OR INSTALL EXTENSION CORDS, WIRING, OR PLUGS OTHER THAN PORTABLE AIRCRAFT-TYPE CANNON PLUGS	42
G334 INSPECT OR SERVICE EMERGENCY BATTERY LIGHTING UNITS	36
G328 INSPECT OR CLEAN RECEPTACLES OR SWITCHES	34
J550 STORE SPECIAL TOOLS OR SHOP EQUIPMENT	30
G383 SOLDER ELECTRICAL CONNECTIONS	30
G375 REMOVE OR INSTALL PHOTO CELLS FOR SECURITY LIGHTING	30
G343 ISOLATE MALFUNCTIONS WITHIN LIGHTING SYSTEMS	28
G324 INSPECT OR CLEAN INTERIOR JUNCTION, RECEPTACLE, OR SWITCH BOXES	24
E219 MAKE ENTRIES ON AF FORMS 1255 (QUALITY CONTROL EVALUATION)	22

Average Number of Tasks Performed: 26
* Tasks shown account for 74 percent of job time

TABLE A11
ELECTRO-MECHANICAL EQUIPMENT REPAIRMEN
(GRP106)

<u>TASKS*</u>	<u>PERCENT MEMBERS PERFORMING (N=7)</u>
J542 CLEAN OR MAINTAIN HANDTOOLS OR TOOL BOXES	100
J548 PERFORM ROUTINE OR DAILY INSPECTIONS OF WORK AREA ENVIRONMENT, HOUSEKEEPING, OR SAFETY PROVISIONS	86
J544 CLEAN, SERVICE, OR LUBRICATE SPECIAL TOOLS OR SHOP EQUIPMENT	86
I489 ASSEMBLE OR DISASSEMBLE ELECTRO-MECHANICAL EQUIPMENT OR COMPONENTS	86
H395 CLEAN INSTALLED EQUIPMENT	86
H401 INSPECT, CLEAN, OR SERVICE AC CONTROLS	86
I491 BENCH CHECK OR CLEAN ELECTRO-MECHANICAL EQUIPMENT	86
I500 INSPECT, CLEAN, OR SERVICE MOTOR BEARINGS	86
J549 REMOVE OR DISPOSE OF TRASH, WASTE, OR MATERIALS	86
H402 INSPECT, CLEAN, OR SERVICE AC EQUIPMENT	86
H390 ADJUST OR ALIGN SHEAVES, PULLEYS, OR LIMITING SWITCHES	86
I492 BENCH CHECK OR CLEAN GENERATORS, MOTORS, OR STARTERS	86
G383 SOLDER ELECTRICAL CONNECTIONS	86
G352 MEASURE, CUT, RUN, OR TERMINATE WIRING THROUGH CONDUITS	86
H457 REMOVE OR INSTALL AC EQUIPMENT CONTROLS	71
J545 PERFORM OPERATOR MAINTENANCE ON CIVIL ENGINEERING SHOP EQUIPMENT	71
J550 STORE SPECIAL TOOLS OR SHOP EQUIPMENT	71
J543 CLEAN OR SERVICE SHOP VEHICLES, SUCH AS MOBILE VANS AND SERVICE TRUCKS	71
I502 ISOLATE MALFUNCTIONS WITHIN AC MOTORS OR STARTERS	71
F259 ATTACH OR ANNOTATE EQUIPMENT STATUS LABELS OR TAGS, SUCH AS DD FORMS 1474 (SERVICEABLE TAG-MATERIEL)	71
F260 CERTIFY STATUS OF REPARABLE, SERVICEABLE, OR COMDENMED PARTS	71
J546 PERFORM OPERATOR MAINTENANCE ON SHOP VEHICLES	71
H476 REMOVE OR INSTALL EXTENSION CORDS, WIRING, OR PLUGS, OTHER THAN PORTABLE AIRCRAFT-TYPE CANNON PLUGS	71
G382 ROUTE WIRING OR CABLES	71
G348 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE METALLIC WIRING INSTALLATIONS	71
J487 SPLICE WIRING OR CABLES	71
I510 REMOVE CORROSION FROM ELECTRO-MECHANICAL EQUIPMENT COMPONENTS	71
G350 MEASURE, CUT, BEND, FIT, OR ATTACH THIN WALL TUBING OR CONDUITS	71

Average Number of Tasks Performed: 67
* Tasks shown account for 39 percent of job time

TABLE A12
ALARM SYSTEMS PERSONNEL
(GRP079)

TASKS*	PERCENT MEMBERS PERFORMING (N=58)
H479 REMOVE OR INSTALL INTRUSION ALARM SYSTEMS OR COMPONENTS	86
H441 ISOLATE MALFUNCTIONS WITHIN INTRUSION ALARM SYSTEMS OR COMPONENTS	84
H421 INSPECT, CLEAN, OR SERVICE INTRUSION ALARM SYSTEMS OR COMPONENTS	84
G383 SOLDER ELECTRICAL CONNECTIONS	83
I498 BENCH CHECK, SERVICE, OR REPAIR INTRUSION ALARM SYSTEMS OR COMPONENTS	81
G352 MEASURE, CUT, RUN, OR TERMINATE WIRING THROUGH CONDUITS	81
G353 MEASURE, CUT, THREAD, BEND, OR FIT RIGID CONDUITS OR PIPES	79
H464 REMOVE OR INSTALL BATTERIES	79
H477 REMOVE OR INSTALL FIRE ALARM SYSTEMS OR COMPONENTS	76
H407 INSPECT, CLEAN, OR SERVICE BATTERIES	76
H418 INSPECT, CLEAN, OR SERVICE FIRE ALARM SYSTEMS OR COMPONENTS	72
H487 SPLICE WIRING OR CABLES	72
J542 CLEAN OR MAINTAIN HANDTOOLS OR TOOL BOXES	72
J543 CLEAN OR SERVICE SHOP VEHICLES, SUCH AS MOBILE VANS AND SERVICE TRUCKS	72
G350 MEASURE, CUT, BEND, FIT, OR ATTACH THIN WALL TUBING OR CONDUITS	71
H488 TIGHTEN WIRING CONNECTIONS	71
J549 REMOVE OR DISPOSE OF TRASH, WASTE, OR MATERIALS	71
G368 REMOVE OR INSTALL FUSES OR CIRCUIT BREAKERS	71
H439 ISOLATE MALFUNCTIONS WITHIN FIRE ALARM SYSTEMS OR COMPONENTS	67
I497 BENCH CHECK, SERVICE, OR REPAIR FIRE ALARM SYSTEMS OR COMPONENTS	67
H429 INSPECT, CLEAN, OR SERVICE WARNING ALARM SYSTEMS OR COMPONENTS	67
H453 PERFORM CONTINUITY CHECKS OF COMMUNICATION LINES	67
G382 ROUTE WIRING OR CABLES	67
H408 INSPECT, CLEAN, OR SERVICE BATTERY BANKS	64
H454 PERFORM OPERATIONAL INSPECTIONS AFTER INSTALLATION	60
H347 MEASURE, CHISEL, CUT, OR DRILL STRUCTURES	60
H409 INSPECT, CLEAN, OR SERVICE BATTERY CHARGERS	59
H435 ISOLATE MALFUNCTIONS WITHIN BATTERY CHARGERS	55
H452 ISOLATE MALFUNCTIONS WITHIN WARNING ALARM SYSTEMS OR COMPONENTS	53
H466 REMOVE OR INSTALI BATTERY CHARGERS	53

Average Number of Tasks Performed: 68
* Tasks shown account for 46 percent of job time

TABLE A13
SHOP MAINTENANCE PERSONNEL
(GRP072)

TASKS*	PERCENT MEMBERS PERFORMING (N=25)
H487 SPLICE WIRING OR CABLES	88
H488 TIGHTEN WIRING CONNECTIONS	88
J549 REMOVE OR DISPOSE OF TRASH, WASTE, OR MATERIALS	88
H480 REMOVE OR INSTALL LIGHT BULBS	68
J543 CLEAN OR SERVICE SHOP VEHICLES, SUCH AS MOBILE VANS AND SERVICE TRUCKS	56
J542 CLEAN OR MAINTAIN HANDTOOLS OR TOOL BOXES	52
G328 INSPECT OR CLEAN RECEPTACLES OR SWITCHES	52
G369 REMOVE OR INSTALL INTERIOR JUNCTION, RECEPTACLE, OR SWITCH BOXES	52
G349 MEASURE, CUT, ATTACH, OR CONNECT FLEXIBLE NON-METALLIC CABLES	52
G368 REMOVE OR INSTALL FUSES OR CIRCUIT BREAKERS	52
I537 REWIRE LIGHTING FIXTURES	48
J546 PERFORM OPERATOR MAINTENANCE ON SHOP VEHICLES	48
J545 PERFORM OPERATOR MAINTENANCE ON CIVIL ENGINEERING SHOP EQUIPMENT	48
J550 STORE SPECIAL TOOLS OR SHOP EQUIPMENT	44
H476 REMOVE OR INSTALL EXTENSION CORDS, WIRING, OR PLUGS, OTHER THAN PORTABLE AIRCRAFT-TYPE CANNON PLUGS	44
G350 MEASURE, CUT, BEND, FIT, OR ATTACH THIN WALL TUBING OR CONDUITS	44
J544 CLEAN, SERVICE, OR LUBRICATE SPECIAL TOOLS OR SHOP EQUIPMENT	40
G382 ROUTE WIRING OR CABLES	40
G377 REMOVE OR INSTALL RECEPTACLES OR SWITCHES, OTHER THAN EXPLOSION PROOF	36
G324 INSPECT OR CLEAN INTERIOR JUNCTION, RECEPTACLE, OR SWITCH BOXES	36
G354 REMOVE OR INSTALL AC EMERGENCY LIGHTING UNITS	36
G353 MEASURE, CUT, THREAD, BEND, OR FIT RIGID CONDUITS OR PIPES	36
G334 INSPECT OR SERVICE EMERGENCY BATTERY LIGHTING UNITS	32
G383 SOLDER ELECTRICAL CONNECTIONS	32
J548 PERFORM ROUTINE OR DAILY INSPECTIONS OF WORK AREA ENVIRONMENT, HOUSEKEEPING, OR SAFETY PROVISIONS	28
J547 PERFORM PERIODIC OR SPECIAL INSPECTIONS OF FACILITIES OR WORK AREAS	28
D188 PRACTICE FIRST AID PROCEDURES FOR ELECTRICAL SHOCK	28

Average Number of Tasks Performed: 27

* Tasks shown account for 61 percent of job time

TABLE A14
SENIOR SUPERVISORS AND MANAGERS CLUSTER
(GRP088)

TASKS*	PERCENT MEMBERS PERFORMING (N=116)
A29 PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	89
A5 COORDINATE WORK ACTIVITIES WITH OTHER SECTIONS OR AGENCIES	87
A45 SCHEDULE LEAVES OR PASSES	84
C140 WRITE AIRMAN PERFORMANCE REPORTS	83
C125 INSPECT PERSONNEL FOR COMPLIANCE WITH MILITARY STANDARDS	83
B82 ORIENT NEWLY ASSIGNED PERSONNEL	83
B86 SUPERVISE ELECTRICIANS (AFSC 54250)	82
A48 SCHEDULE WORK ASSIGNMENTS AND PRIORITIES	79
B83 SUPERVISE APPRENTICE ELECTRICIANS (AFSC 54230)	78
B54 COUNSEL SUBORDINATES ON PERSONAL OR MILITARY-RELATED MATTERS	78
A28 ESTABLISH WORK SCHEDULES	77
D181 MAKE ENTRIES ON AF FORMS 623 AND 623A (ON-THE-JOB TRAINING RECORD)	77
B53 COUNSEL SUBORDINATES ON JOB PROGRESSION OR CAREER DEVELOPMENT	77
A25 ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	76
C142 WRITE RECOMMENDATIONS FOR AWARDS OR DECORATIONS	75
A10 DETERMINE WORK PRIORITIES	73
C124 INDORSE AIRMEN PERFORMANCE REPORTS	72
A37 PLAN WORK ASSIGNMENTS OR SEQUENCE OF WORK OPERATIONS	71
D188 PRACTICE FIRST AID PROCEDURES FOR ELECTRICAL SHOCK	71
A3 ASSIGN SPONSORS FOR NEWLY ASSIGNED PERSONNEL	71
E204 MAINTAIN COUNSELING FORMS	70
D146 ASSIGN ON-THE-JOB TRAINING (OJT) TRAINERS OR SUPERVISORS	69
A46 SCHEDULE PERSONNEL FOR SCHOOLS, TEMPORARY DUTY (TDY) ASSIGNMENTS, OR NONTECHNICAL TRAINING	69
B84 SUPERVISE CIVILIAN PERSONNEL	68
B80 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	68
D155 COUNSEL TRAINEES ON TRAINING PROGRESS	68
J548 PERFORM ROUTINE OR DAILY INSPECTIONS OF WORK AREA ENVIRONMENT, HOUSEKEEPING, OR SAFETY PROVISIONS	67
D170 EVALUATE OJT TRAINEES OR TRAINERS	67
D184 MOTIVATE OJT TRAINERS AND TRAINEES	66
A7 DETERMINE REQUIREMENTS FOR MAINTENANCE OF EQUIPMENT	65

Average Number of Tasks Performed: 124
* Tasks shown account for 23 percent of job time

TABLE A15
SHOP NCOICs AND FOREMEN
(GRP173)

<u>TASKS*</u>	<u>PERCENT MEMBERS PERFORMING (N=17)</u>
G353 MEASURE, CUT, THREAD, BEND, OR FIT RIGID CONDUITS OR PIPES	100
G352 MEASURE, CUT, RUN, OR TERMINATE WIRING THROUGH CONDUITS	100
G383 SOLDER ELECTRICAL CONNECTIONS	100
H407 INSPECT, CLEAN, OR SERVICE BATTERIES	100
H479 REMOVE OR INSTALL INTRUSION ALARM SYSTEMS OR COMPONENTS	94
H441 ISOLATE MALFUNCTIONS WITHIN INTRUSION ALARM SYSTEMS OR COMPONENTS	94
I498 BENCH CHECK, SERVICE, OR REPAIR INTRUSION ALARM SYSTEMS OR COMPONENTS	94
C125 INSPECT PERSONNEL FOR COMPLIANCE WITH MILITARY STANDARDS	94
C140 WRITE AIRMAN PERFORMANCE REPORTS	94
H409 INSPECT, CLEAN, OR SERVICE BATTERY CHARGERS	94
H477 REMOVE OR INSTALL FIRE ALARM SYSTEMS OR COMPONENTS	88
H421 INSPECT, CLEAN, OR SERVICE INTRUSION ALARM SYSTEMS OR COMPONENTS	88
A10 DETERMINE WORK PRIORITIES	88
D150 CONDUCT OJT	88
J542 CLEAN OR MAINTAIN HANDTOOLS OR TOOL BOXES	88
G347 MEASURE, CHISEL, CUT, OR DRILL STRUCTURES	88
D170 EVALUATE OJT TRAINEES OR TRAINERS	88
D181 MAKE ENTRIES ON AF FORMS 623 AND 623A (ON-THE-JOB TRAINING RECORD)	88
H464 REMOVE OR INSTALL BATTERIES	88
J550 STORE SPECIAL TOOLS OR SHOP EQUIPMENT	88
H418 INSPECT, CLEAN, OR SERVICE FIRE ALARM SYSTEMS OR COMPONENTS	82
H439 ISOLATE MALFUNCTIONS WITHIN FIRE ALARM SYSTEMS OR COMPONENTS	82
I497 BENCH CHECK, SERVICE, OR REPAIR FIRE ALARM SYSTEMS OR COMPONENTS	82
B86 SUPERVISE ELECTRICIANS (AFSC 54250)	82
B83 SUPERVISE APPRENTICE ELECTRICIANS (AFSC 54230)	82
A5 COORDINATE WORK ACTIVITIES WITH OTHER SECTIONS OR AGENCIES	82
H488 TIGHTEN WIRING CONNECTIONS	82
A48 SCHEDULE WORK ASSIGNMENTS AND PRIORITIES	82
B54 COUNSEL SUBORDINATES ON PERSONAL OR MILITARY-RELATED MATTERS	82
B53 COUNSEL SUBORDINATES ON JOB PROGRESSION OR CAREER DEVELOPMENT	82

Average Number of Tasks Performed: 154
* Tasks shown account for 24 percent of job time

TABLE A16

MANAGERS
(GRP235)

TASKS*	PERCENT MEMBERS PERFORMING (N=58)
A29 PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	100
A45 SCHEDULE LEAVES OR PASSES	97
B82 ORIENT NEWLY ASSIGNED PERSONNEL	97
B86 SUPERVISE ELECTRICIANS (AFSC 54250)	95
A48 SCHEDULE WORK ASSIGNMENTS AND PRIORITIES	95
A28 ESTABLISH WORK SCHEDULES	93
A25 ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	93
A5 COORDINATE WORK ACTIVITIES WITH OTHER SECTIONS OR AGENCIES	91
B84 SUPERVISE CIVILIAN PERSONNEL	90
C125 INSPECT PERSONNEL FOR COMPLIANCE WITH MILITARY STANDARDS	90
A46 SCHEDULE PERSONNEL FOR SCHOOLS, TEMPORARY DUTY (TDY) ASSIGNMENTS, OR NONTECHNICAL TRAINING	90
C142 WRITE RECOMMENDATIONS FOR AWARDS OR DECORATIONS	90
C92 CONDUCT SAFETY INSPECTIONS	88
B83 SUPERVISE APPRENTICE ELECTRICIANS (AFSC 54230)	86
B53 COUNSEL SUBORDINATES ON JOB PROGRESSION OR CAREER DEVELOPMENT	86
F269 ESTIMATE OR VALIDATE BENCH STOCK REQUIREMENTS	86
D146 ASSIGN ON-THE-JOB TRAINING (OJT) TRAINERS OR SUPERVISORS	86
A3 ASSIGN SPONSORS FOR NEWLY ASSIGNED PERSONNEL	84
A37 PLAN WORK ASSIGNMENTS OR SEQUENCE OF WORK OPERATIONS	83
B54 COUNSEL SUBORDINATES ON PERSONAL OR MILITARY-RELATED MATTERS	83
F267 ESTABLISH REQUIREMENTS FOR EQUIPMENT OR TOOLS	83
E240 MAKE ENTRIES ON AF FORMS 561 (BASE CIVIL ENGINEER WEEKLY SCHEDULE)	81
B80 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	81
A35 PLAN SAFETY PROGRAMS	81
D184 MOTIVATE OJT TRAINERS AND TRAINEES	81
A47 SCHEDULE USE OF EQUIPMENT OR VEHICLES	81
D155 COUNSEL TRAINEES ON TRAINING PROGRESS	81
F304 REQUISITION TOOLS AND EQUIPMENT	81
D188 PRACTICE FIRST AID PROCEDURES FOR ELECTRICAL SHOCK	81
C140 WRITE AIRMAN PERFORMANCE REPORTS	79

Average Number of Task Performed: 153

* Tasks shown account for 22 percent of job time

TABLE A17

OJT MONITORS
(GRP110)

<u>TASKS*</u>	<u>PERCENT MEMBERS PERFORMING (N=22)</u>
D181 MAKE ENTRIES ON AF FORMS 623 AND 623A (ON-THE-JOB TRAINING RECORD)	95
C140 WRITE AIRMAN PERFORMANCE REPORTS	91
B86 SUPERVISE ELECTRICIANS (AFSC 54250)	82
B83 SUPERVISE APPRENTICE ELECTRICIANS (AFSC 54230)	77
A5 COORDINATE WORK ACTIVITIES WITH OTHER SECTIONS OR AGENCIES	77
D177 MAINTAIN TRAINING RECORDS, CHARTS, OR GRAPHS	77
A3 ASSIGN SPONSORS FOR NEWLY ASSIGNED PERSONNEL	77
D150 CONDUCT OJT	73
B54 COUNSEL SUBORDINATES ON PERSONAL OR MILITARY-RELATED MATTERS	73
A29 PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	73
B82 ORIENT NEWLY ASSIGNED PERSONNEL	68
B53 COUNSEL SUBORDINATES ON JOB PROGRESSION OR CAREER DEVELOPMENT	68
A45 SCHEDULE LEAVES OR PASSES	68
C125 INSPECT PERSONNEL FOR COMPLIANCE WITH MILITARY STANDARDS	64
D188 PRACTICE FIRST AID PROCEDURES FOR ELECTRICAL SHOCK	64
D155 COUNSEL TRAINEES ON TRAINING PROGRESS	64
D146 ASSIGN ON-THE-JOB TRAINING (OJT) TRAINERS OR SUPERVISORS	64
D182 MAKE ENTRIES ON AF FORMS 797 (JOB QUALIFICATION STANDARD CONTINUATION)	64
B80 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	64
C124 INDORSE AIRMEN PERFORMANCE REPORTS	59
A25 ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	59
D170 EVALUATE OJT TRAINEES OR TRAINERS	59
A28 ESTABLISH WORK SCHEDULES	59
C142 WRITE RECOMMENDATIONS FOR AWARDS OR DECORATIONS	59
J550 STORE SPECIAL TOOLS OR SHOP EQUIPMENT	55
D178 MAKE ENTRIES ON AF FORM 1096 (CDC STATUS RECORD)	55
A2 ASSIGN PERSONNEL TO DUTY POSITIONS	55
A48 SCHEDULE WORK ASSIGNMENTS AND PRIORITIES	55
A37 PLAN WORK ASSIGNMENTS OR SEQUENCE OF WORK OPERATIONS	55
D184 MOTIVATE OJT TRAINERS AND TRAINEES	55

Average Number of Tasks Performed: 70

* Tasks shown account for 34 percent of job time

TABLE A18
PLANNING TECHNICIANS
(GRP245)

TASKS*	PERCENT MEMBERS PERFORMING (N=28)
A1 APPLY ENGINEERED PERFORMANCE STANDARDS (EPS) IN PLANNING AND ESTIMATING JOBS	100
E252 MAKE ENTRIES ON DD FORMS 2167 (JOB PHASE CALCULATION SHEET)	96
G311 CALCULATE POWER REQUIREMENTS	96
G313 DETERMINE LAYOUT FOR INSTALLATION OF INTERIOR POWER OR LIGHTING SYSTEMS	93
F289 MAKE ENTRIES ON AF FORMS 1445 (MATERIALS AND EQUIPMENT LIST)	89
A13 DEVELOP INSTALLATION PLANS OR WORKING DRAWINGS	89
G310 ANALYZE PLANS, DIAGRAMS, OR SPECIFICATIONS FOR INSTALLATION OF INTERIOR POWER DISTRIBUTION SYSTEMS	89
A9 DETERMINE SPECIFICATIONS FOR WIRING, CIRCUIT PROTECTIVE DEVICES, SENSORS, OR CONTROLS	86
C130 PERFORM ON-SITE INVESTIGATIONS OF PROPOSED WORK TO DETERMINE RESOURCE REQUIREMENTS	82
E237 MAKE ENTRIES ON AF FORMS 527 (BASE CIVIL ENGINEER WORK ORDER)	82
A5 COORDINATE WORK ACTIVITIES WITH OTHER SECTIONS OR AGENCIES	79
F262 COMPLETE DD FORMS 1348-6 (NON-NSN REQUISITION (MANUAL))	75
A31 PLAN INSTALLATION, MAINTENANCE, OR INSPECTION OF ELECTRICAL POWER DISTRIBUTION SYSTEMS OR ELECTRO-MECHANICAL EQUIPMENT	71
C129 PERFORM FACILITY SURVEYS	71
E216 MAKE ENTRIES ON AF FORMS 103 (BASE CIVIL ENGINEERING WORK CLEARANCE REQUEST)	71
E254 PREPARE AF FORMS 332 (BCE WORK REQUEST)	64
H391 ANALYZE DRAWINGS, SCHEMATICS, OR SPECIFICATIONS FOR EQUIPMENT INSTALLATION	61
H396 DETERMINE POWER, CIRCUIT, OR CONTROL REQUIREMENTS FOR AC EQUIPMENT	61
A29 PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	57
A37 PLAN WORK ASSIGNMENTS OR SEQUENCE OF WORK OPERATIONS	54
G397 DETERMINE POWER, CIRCUIT, OR CONTROL REQUIREMENTS FOR DC EQUIPMENT	54
A32 PLAN LAYOUT OF FACILITIES	50
E217 MAKE ENTRIES ON AF FORMS 1135 (BCE REAL PROPERTY MAINTENANCE REQUEST)	50
A8 DETERMINE REQUIREMENTS FOR SPACE, EQUIPMENT, OR SUPPLIES	50

Average Number of Tasks Performed: 38

* Tasks shown account for 52 percent of job time

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5-85

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